Rather a quiet pass over Carnarvon. We still got 3 minutes and 57 seconds remaining in the Carnarvon pass. We'll continue to standby for any air to ground conversation that might transpire.

END OF TAPE

HOU FLT Carnarvon from flight.

CRN Go ahead.

HOU FLT LOS OBC, please.

CRN Roger.

Gemini 12, Carnarvon. One minute to LOS, 18 minutes to Hawaii.

Lovell Roger, that sounds good.

CRN Los Agena.

HOU FLT Roger, Carnarvon.

CRN Los Gemini. All systems LOS.

And this is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. The Spacecraft will be coming over the Canton Island voice remoting station and subsequently the Hawaiian Station within about 8 minutes. We'll come up again at that time with any conversation that happens during these two passes. At 69 hours, 46 minutes and 33 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, let's join the conversation in progress between spacecraft Gemini XII and the Mission Control Center through the Canton Island voice remoting station.
This is Mission Control, it's rather quiet right now, but earlier in this pass when contact was first established, spacecraft communicator Pete Conrad advised the crew that picture taking opportunities during the upcoming stateside pass were quite good. And then he advised them that he was standing by. There may not be any further conversation during the Canton Island pass. We'll stand by... the Canton Island pass blends in to the pass over Hawaii and we have approximately 13 minutes remaining over both of these stations and then it bridges across over in to the stateside pass. We'll continue to stand by.....

This is Mission Control again. According to today's flight plan, the crew should be in the midst of two runs of the D10 experiment, Ion Sensing Attitude Control. Both of these runs scheduled, well the first one will be in the roll attitude mode, the second in the pitch attitude mode. We have about 5 minutes left, actually about 30 minutes left in the pitch attitude mode. Approximately 45 minutes they will do a run of the S11 airglow horizon photography as they approach their sunset. We'll continue to standby for any air to ground conversation over Canton Island and Hawaii.

Canton go local

HAW Hawaii has TM both vehicles

HOU Roger, Hawaii. Should be quiet pass in the middle of that D10. Standing by.

HAW Gemini 12 Hawaii Cap Com standing by.

S/C Roger, Hawaii. We have just completed the D10 mode D.

HAW Roger.

HOU We copy.

HAW ....showing computer on mode 1. Remains on.

HOU Roger.

END OF TAPE

HAW Gemini XII Hawaii, we'll have LOS in one minute.

S/C Roger.

HOU HAWAII leave the C-band beacon on please.

HAW That's a little tough to do, I'll wait until TX clocks out and then I'll turn it back on at over the hill.

HOU Okay.

HAW He's had LOS with 3 transmitts C-band beacon on He thinks it should be on.

HOU Fine thank you.

And this is Mission Control Houston, at 70 hours 11 minutes and 22 seconds after liftoff. We have had loss of signal at the Hawaii tracking station. We have just a few moments gap here between Hawaii and the first station on the stateside pass, the California station. Two minutes away from acquisition at California, as Pete Conrad mentioned during the Canton Island pass, the weather today over the states is in real fine shape for picture taking. Also there is planned a voice relay exercise using an aircraft during the pass over the Texas station. We'll stand by for conversation during the picture taking and try to determine which areas of the states crew is taking pictures of. Less than one minute now to California acquisition. Conrad is calling Gemini 12 now.

HOU Houston standing by California.

S/C Roger, we've completed D10 mode d, before we go on we're pitching down now slowly to get in position

for some S5 and S6 photos of the states.

HOU Roger. And during your Texas pass, we'd like to work some remote through one of the Ryan aircraft and so I'll give you a little chatter there and if you talk back over Texas we'll appreciate it.

S/C Okay fine.

(Acquisition of telemetry Gemini)

HOU On your next pass across the states we got a little HF music for you to lighten the load.

S/C You're so sweet there Petey.

HOU I always take care of my pals.

HOU Guaymas go remote California go local

CAL Califor.....

END OF TAPE

HOU Gemini 12, Houston. We're coming up to the Texas pass, how does the weather look?

SC (garbled)

HOU Say again.

SC Just passed (garbled)

HOU Very good, and when you have a chance would you give us a - after you've got the time passing the states - a 30-second 02 purge please.

SC Roger.

HOU Would you switch the quantity switch to 02 flight please?

HOU Gemini 12, Houston. How do you read me now?

SC Loud and clear. We're coming up right over Houston.

HOU Roger, you are transmitting to us through the aircraft, could you give us a little description?

SC Roger. For one thing, half of those kids of yours are up on the roof again.

HOU They can't be, they are suppose to be in school.
If that's the case they are playing hooky besides being on the roof.

SC Beautiful sight of Houston, just right over it. Very clear today.

HOU Got you.

Can you see the Dome?

SC Roger.

HOU Very good.

12, Houston. Are you calling?

SC Negative.

HOU 12, Houston, now we are back to you through the Cape.

12, Houston.

SC Go ahead.

HOU Roger, the sextant people passed me this information they took from your readings and your bias error is minus 7.20 seconds and the standard deviation was 9.10 seconds.

SC Roger. Try and do better.

END OF TAPE

HOU 12, Houston. Could you give us your 30 second purge here. We would like to watch it.

S/C Roger. Coming up on 30 second purge.

HOU Thank you. And on your next pass across the States, don't forget to run out your HF adapter antenna there and we will play you a little tune.

S/C Okay.

GTI LOS GTI.

GTI LOS Turk.

HOU Gemini 12, Gemini 12. Houston. One minute until LOS Antigua. We will see you over Ascension.

S/C Roger.

ANT LOS Antigua.

And this is Mission Control Houston at 70 hours 35 minutes and 40 seconds after lift-off. We have had loss of signal at the last station in the Eastern Test Range, Antigua. We will be coming up over the Ascension Island station at approximately 5 minutes. The Ascension Island voice remoting station. We will come up again at that time with the conversation through that station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 70 hours 40 minutes and 33 seconds after liftoff. Spacecraft Gemini XII has just come up over the Ascension voice remoting station and we'll stand by for any conversation from Mission Control through the crew of Gemini XII. The duration of the pass over Ascension will be 6 minutes 54 seconds. Pete Conrad is getting ready to put in a call to the crew. Let's eaves drop....

HOU Gemini 12 Houston, standing by at Ascension.

S/C Roger we're going to try mode.....(garbled)

HOU Say it a little slower, you're not too high yet.

S/C We're trying S11-3 to see if we could do it.

HOU Roger, copy.

This is Mission Control Houston, a rather quiet pass over Ascension Island the spacecraft Gemini XII just went in to darkness. They're running another run in the pitch mode of S11 Ion Sensing Attitude Control experiment at the present time. In approximately 9 minutes they'll be coming over the Tananarive voice remoting station.

HOU Gemini 12, Gemini 12 Houston one minute to LOS Ascension

We are less than one minute from loss of signal at the Ascension Island voice remoting station. Gemini 12 at the present time is in orbit with an apogee of 157.8 nautical miles and a perigee of 142.7 nautical miles. We'll continue to stand by however, it is unlikely that any further conversation will take place over the Ascension Island. Tannanarive is coming up in approximately 8

minutes.

This is Mission Control Houston apparently we have had loss of signal at the Ascension Island station. The flight plan calls for the crew to be conducting the S11 airglow horizon photography experiment at the present time. At 70 hours 49 minutes and 54 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Gemini 12 is coming up over the Tananarive voice remoting station, field of acquisition. Spacecraft communicator Pete Conrad will be conversing with the crew through the station. There he goes. Let's listen.

HOU Gemini 12, Gemini 12, Houston standing by at Tananarive.

S/C Roger....

HOU 12, Houston, say again.

S/C ....

HOU Roger. Copy.

TAN Tananarive has LOS.

And this is Mission Control Houston 71 hours 4 minutes and as you were 71 hours 5 minutes after lift-off. We have had loss of signal from the Tananarive voice remoting station. That was a minimum conversation pass. We are coming up over Carnarvon in approximately 7 minutes. We will come back up at that time with the pass over the Carnarvon, Australia station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Spacecraft Gemini 12 is now entering the acquisition range of the Carnarvon, Australia tracking station. Let's listen in.

CRO 12, Carnarvon standing by.
C and S-band track Carnarvon.

SC Carnarvon, 12. We have just completed S-11 Mode C.

CRO Okay.

CRO All systems GO on Gemini..

HOU Roger.

CRO Flight, Carnarvon

HOU Go ahead.

CRO Roger, our first Gemini main was no good due to a bad time label. Get you another one.

HOU Okay, thank you.

CRO Roger, this happens when he switches the hours G.M.T.

HOU Okay

AFD Carnarvon, AFD

CRO Go ahead

AFD Would you leave the C-band on for Wheeling?

CRO I have already initiated TX, I'll try and get it back on again.

HOU Roger

CRO One minute to LOS at Carnarvon, standing by.

CRO ....all systems GO at LOS.

This is Mission Control Houston. We've had loss of signal at the Carnarvon, Australia tracking station. Spacecraft Gemini 12 will be coming up over Hawaii in approximately 16 minutes. At 71 hours 21 minutes and 43 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 71 hours 38 minutes and 25 seconds after liftoff. We have just had acquisition by the Hawaii Island tracking station. Let's listen in between... for the conversation.

HAW Gemini 12, Hawaii Cap Com.

S/C Hawaii 12, go ahead.

HAW We have a short flight plan update for you whenever you're ready to copy .

S/C Roger, go ahead.

HAW Okay, it will be for 45 over Kanos. It's S5 and S6 remote Bravo, over Mexico. S5 mode Alpha sequence 2 and 6; S5 mode Bravo sequence 7; a red dye marker 20 miles south of the mouth of the Mississippi, over.

S/C Roger, that was on the next Rev?

HOU The one coming up.

S/C ...on the one coming up right now. Okay S5, S6 mode Bravo over Mexico, S5 Mode Alpha, sequence 2 and 6 S5 mode Bravo sequence 7, red dye 20 miles south of the Delta.

HAW Roger.

S/C This is the last chance all experimentors come and get it.

HAW Righto. Okay, in general information the data from D10 experiment has been very good. It looks like you are doing real fine on your attitude control.

S/C Okay, understand..... (faded out)

HOU Hawaii from flight.

HAW Go flight.

HOU And we want to leave the C-band on for the states track.

HAW Okay, I'll real time him off the....or do you want maybe just go ahead and leave TM on.

HOU Yeah, let's just leave the TM on also.

HAW Okay.

HAW Gemini 12, we'll have LOS in a minute.

S/C Hawaii Roger. Thank you.

HAW Everything is looking real good for you.

HOU Roger Hawaii.

HAW Have LOS Agena still got Gemini

HOU Roger. Okay Hawaii see you next pass.

And this is Mission Control Houston, we have had loss of signal at the Hawaii Island tracking station. We should be coming up momentarily on the California station on the first station of the stateside pass. During this pass the crew will take photographs of some terrain objects in Mexico and also a red dye marker that is in the sea, some 20 miles off the mouth of the Mississippi Delta. And also on the high frequency or what is called, air to ground

two loop, some music will be piped up to the crew for their relaxation. We're standing by and California should be acquiring any moment now. Let's listen in.

HOU Gemini 12 Houston standing by at California.

S/C Houston 12 Roger

HOU And if you've got your HF on we'll be bringing you the music in about 3 or 4 minutes.

S/C Roger

END OF TAPE

HOU ...and before you get busy, could I get a PQI and a water gun count from you.

S/C PQI is 25 percent.

HOU Roger, 25 percent.

S/C Water gun is 2033.

HOU Roger 2033, and after you make your photography over the states, while we are still in Antigua acquisition, we would like full hydrogen fuel cell purge and a 30 seconds O_2 purge. You can do that at your convenience, after you get done.

S/C Understand - full hydrogen and 30 second O_2.

HOU That's correct, thank you.

S/C That's section 2, then 1.

HOU That's affirmative.

HOU Guaymas go remote, California go local.

GYM Guaymas remote.

CAL California local

HOU 12, Houston, the music is rolling now, I'm not sure you are getting it right now, it's coming out of the Cape.

S/C Oh, out of the Cape eh, okay.

(music)

HOU Your fuel cell Delta P circuit breaker open or did the lights go out.

S/C The circuit breaker is open, it was open for S-11.

HOU Okay

S/C Standby now?

HOU That's affirm.

HOU Are you getting any music yet.

S/C No, we have it turned way up.

HOU It sounds great here on the ground.

S/C Just coming in now.

HOU Very good.

S/C Man, we got the music.

HOU Very good.

S/C Trying to think what it was.

HOU It's "Sound of Music".

S/C Very good.

END OF TAPE.

S/C We couldn't pick it up. There is some cloud coverage over that area.

HOU Roger.

S/C It is coming through nicely now.

HOU Very good.

S/C Pete, we are over your favorite islands.

HOU Roger. I noticed that. Would you care to name it?

12, Houston. If you care to name it, you can join a very exclusive club.

S/C Roger, understand it is...

HOU That is affirm.

12, Houston. Any time you can give us the fuel cell purge in the next 3 or 4 minutes, we would appreciate it, if you can.

S/C Okay. Here we go now.

HOU Okay, 12 we saw the purge. Would you give us your cyro switch to hydrogen position, please?

S/C H_2.

HOU Very good. Thank you. Still getting the music?

S/C Just about faded out, Pete.

HOU 12, Houston. You can put the cyro switch to off.

Thank you.

GTI LOS Turk.

END OF TAPE

(MUSIC PLAYING)

HOU 12 Houston, one minute to LOS Antigua, see you over Ascension.

S/C Roger.

LOS Antigua

And this is Mission Control Houston at 72 hours and 11 minutes and 2 seconds after liftoff, with spacecraft Gemini 12 going over the hill in the eastern test range to Julia Andrews singing "My Favorite Things" from "The Sound of Music". This is Mission Houston.

END OF TAPE

This is Mission Control Houston 72 hours 16 minutes and 4 seconds after liftoff. They have had acquisition of signal at the Ascension Island voice remoting station. We'll stand by for any possible conversation between the spacecraft and Houston. Let's listen now.

HOU Gemini 12, Gemini 12 Houston standing by at Ascension.

HOU Gemini 12, Gemini 12 Houston standing by at Ascension.

HOU 12 Houston through Ascension, we're about one minute 30 seconds to LOS standing by.

S/C Roger, we're in D10 mode,

HOU Roger, D10 mode B

And this is Mission Control Houston, 72 hours 25 minutes and 7 seconds after liftoff. We've had ascension loss of signal. Approximately 8 minutes spacecraft Gemini XII will cross the Tananarive voice remoting station. We'll come back up at that time with any conversation. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 72 hours, 32 minutes, and 57 seconds after liftoff. Coming into the acquisition area of the Tananarive voice remoting station. Duration of this pass will be 6 minutes and 50 seconds. We are standing by for Pete Conrad to put in a call through Tananarive to the crew of Gemini 12. It may be just a standby call. There he goes, let's listen.

HOU Gemini 12, Gemini 12, Houston through Tananarive standing by.

S/C Roger

HOU Okay

HOU Gemini 12, Houston, one minute to LOS Tananarive.

S/C Roger.

TAN Tananarive LOS

And this is Mission Control Houston. 72 hours, 40 minutes and 21 seconds after liftoff. We have had loss of signal at Tananarive. Carnarvon in approximately 8 minutes. This is Mission Control Houston.

END OF TAPE

This is Mission Control at 72 hours 48 minutes and 34 seconds after lift-off. Spacecraft Gemini 12 is coming over the hill at Carnarvon, Australia tracking station. And they now have telemetry somewhat at Carnarvon. We will stand by to monitor any air-to-ground conversation. Let's listen in.

CRO — Carnarvon standing by.

S/C — Roger. When we finish up on D-10, I think we have time to sneak in mode C. I think we can do that. We will do a minute in mode D.

CRO — Okay. See an S-band track at Carnarvon.

HOU — Carnarvon Com Flight.

CRO — Go ahead.

HOU — What mode did he say he was going to try that sneak in while he had time.

CRO — Charlie.

HOU — Roger. Carnarvon Com Flight.

CRO — Go ahead.

HOU — We want to leave the C-band on.

CRO — Okay. I will turn it back on for you. 12, Carnarvon. 1 minute until LOS, see you tomorrow.

S/C Roger, and thank you.

CRO Carnarvon has LOS Gemini and Agena. All systems go at LOS.

HOU Okay, Carnarvon. Sounds like it is time for breakfast.

CRO Roger, that.

And this is Mission Control Houston. We have had loss of signal from Carnarvon, Australia tracking station. That was the last pass for today over Carnarvon. The next revolution will bring the spacecraft Gemini 12 over the first pass for the tracking ship Coastal Sentry South of Japan. Our next station in this revolution is the Hawaii Island tracking station. In approximately 18 minutes, we will come back up at that time for that pass. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 73 hours 13 minutes and 19 seconds after liftoff. Gemini XII is just coming over the hill at Hawaii. Should be getting contact through telemetry and air to ground. We'll stand by for contact to be established. This is an 8 minute 8 second pass over Hawaii. Let's listen in.

HAW	Gemini XII Hawaii Cap Com
S/C	This is 12 Hawaii, we're finishing up D10 mode C
HAW	Roger.
	I have one item update for you whenever you are ready to copy.
S/C	Roger, stand by
	Go ahead.
HAW	Roger, this will be on this upcoming night pass. There is an S29, from FDS pitch up, 90 degrees east, 4 minutes after sunset to acquire saturn. Libration region then is approximately on camera axis if S11 bracket is used.
S/C	Roger, understand, pitch up 90 degrees 4 minutes after sunset, pick up saturn and the S11 bracket will be pointing at the libration region, thank you.
HAW	Roger.
HOU	Hawaii from flight.
HAW	Go flight

HOU Hawaii from flight.

HAW Go flight.

HOU The Agena wants to know when you do get that load in, the clock load.

HAW Yeah, it's in, and verified.

HOU Thank you.

HAW Rog.

S/C Hawaii 12

HAW 12 Hawaii

S/C Do you have sunset time or a time 4 minutes after sunset?

HAW Stand by

HOU Hawaii flight

HAW Go flight

HOU Sunset GET is 73 + 44 + 51

HAW 12 Hawaii, your sunset time will be 73 + 44 + 51

S/C Roger 73 44 51

HAW Roger

Flight we've got a problem on our time label on our automatic summaries so there probably not getting in there.

HOU Okay, thank you we'll watch for it.

HAW Roger, we're looking for it right now.

The first two went out and then we hit the problem

HOU Okay

HAW Gemini 12 Hawaii, one minute to LOS

S/C Roger

HAW We've had LOS both vehicles.

And this is Mission Control Houston. We've had loss of signal at the Hawaii Island tracking station. While we are waiting for them to come over the hill at California we'll summarize briefly the conversation over Hawaii. The crew of Gemini XII was giving pointing instructions for a run of the S29 librations region photography experiment which would use the planet saturn as a reference point. This will occur some 4 minutes after their sunset which will be at 73 hours 44 minutes and 51 seconds ground elapsed time. We're standing by now for California acquisition.

END OF TAPE

Still standing by for the State side pass. Now Conrad is putting in a call to Gemini 12.

HOU 12, Houston standing by California.

S/C Roger

HOU Ed, do you still have your HF up.

S/C We can get it up.

HOU Okay, why don't you get it up, we got one more pass there and we got a little tune or two for you.

S/C Very well.

HOU Guaymas go remote, California go local.

GYM Guaymas remote.

CAL California local.

HOU Are you picking up any music yet 12.

S/C Not yet.

HOU Okay.

S/C We are doing D-10, Mode A now Houston.

HOU Roger, very good.

HOU 12, Houston, we are reading your D-10 on the ground, and it looks like you've got a real good alignment.

S/C Yes sir, it looks like all these thrusters degraded so much they are coming out even now.

HOU Right. You picking up any music yet.

S/C Nope, haven't picked up any music yet, looks like we are passing over Acapulco again.

HOU Roger. Everybody in Amoco is enjoying the music, sorry we are not getting to you.

HOU 12, Houston, any time you can, we would like another 30 second oxygen purge at your convenience.

S/C Roger.

HOU Texas go remote, Guaymas go local.

TEX Texas remote.

GYM Guaymas local.

(Music)

END OF TAPE

HOU (Music) Thank you for the purge. Did you get the music?

S/C Roger. What song were they playing?

HOU Going Back to Houston. What else?

S/C Yes.

HOU We had a meeting in the office this morning and we just voted you two guys the two astronauts that can get the most attitude control out of the least thrusters. Congratulations.

S/C Fine. Say, as a matter of interest, Pete, that smudge on the window looks like it is on the outside of the first window, Buzz wipped my window off and it is pretty clean now.

HOU Roger.

ANT LOS Antigua.

GTI LOS GTI.

HOU 12, Houston, was he in plat mode? Was it working all right?

S/C Yes, it fired off...if you get it right in there it looks it holds. There is very very little disturbance. She will just sit there for awhile. ...hit the deadbands yet.

HOU Roger.

S/C It is holding a little bit, Houston. However it could maintain...

HOU I am sorry I did not copy the first part of that. Would you say again?

S/C It is holding, but it is...needles.

HOU You mean you are sitting up against deadband. It looks to us on the ground, 12, like you are sitting right up against the deadbands.

GTI LOS Turk.

HOU 12, Houston. We are about 1 minute 30 seconds to LOS. It looks to us on the ground like it was holding within the deadbands.

S/C Yes, that is right. She is holding.

END OF TAPE

HOU 30 seconds, see you at Ascension

LOS Antigua

And this is Mission Control Houston. We've had loss of signal at the Antigua station of the eastern test range. Be coming up on Ascension Island voice remoting station in approximately 8 minutes. At this time the crew should be getting set up for their libration regions photography experiment. It was reported that they have some 210 pounds of usable propellant remaining. Also during this just completed stateside pass more music was piped up to the crew over the second air/ground loop. One portion of the music included "Going Back To Houston". At 73 hours 45 minutes and 3 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. The spacecraft Gemini 12 has just been acquired by the Ascension Island voice remoting station. We are standing by for Pete Conrad to put in a call through the station to the crew of Gemini 12. There he goes, let's listen.

HOU Gemini 12, Gemini 12, Houston through Ascension - Over.

HOU Gemini 12, Houston through Ascension. You don't have to acknowledge this, when you finish your S-29, you can go ahead and power down your platform.

This is Mission Control Houston standing by at Ascension for any further conversation. There is a little over a minute remaining of this pass over the Ascension Island station and we will continue to standby until loss of signal.

HOU Gemini 12, Houston, one minute to LOS Ascension.

S/C Roger

And this is Mission Control Houston, apparently we have had loss of signal at the Ascension Island tracking station. We will come back up during the pass over Tananarive voice remoting station in approximately nine minutes. At 73 hours, 59 minutes, and 23 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Mission Control Houston. 74 hours 8 minutes and 4 seconds after lift-off. Gemini 12 is coming up over the Tananarive voice remoting station. Should be getting acquisition any moment. Let's listen in to the conversation.

HOU Gemini 12, Houston standing by at Tananarive. Gemini 12, Houston standing by at Tananarive.

S/C Roger.

HOU Now that you have had time to fly a little bit, does it seem like you have gotten any of your thrusters back or a little more stuff out of them or are you in about the same shape?

S/C We are in about the same shape. It is just that....I think we get a little bit of thrust out of them. ..or just dumping fuel out. Now with this type of work, we are not moving the spacecraft around...

HOU Roger. Very good.

S/C ...yaw left or try to roll left, you pitch up and things like that.

HOU Roger.

S/C Houston, 12.

HOU Go ahead.

S/C .....

HOU Say again.

S/C Powering down. We just finished S-29.

HOU Very good. You are really clicking them off. Looks good.

And you can go ahead and power down the platform anytime.

S/C Roger.

HOU Three or four more days up there and you will really get them all done.

S/C Thanks a lot.

HOU 12, Houston. One minute until LOS Tananarive.

S/C Roger.

TAN Tananarive LOS.

And this is Mission Control Houston. We have had loss of signal at the Tananarive voice remoting station. The next station to be acquired will be the tracking ship Coastl Sentry. In approximately 15 minutes. At 74 hours 16 minutes and 32 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Gemini XII is coming up over the Coastal Sentry tracking ship. They have acquired the Agena and we're standing by for Gemini to be acquired by electronic gear aboard the tracking ship. We have solid telemetry on Gemini. Gemini is go. Standing by for spacecraft communicator Bill Garvin to put in a call...there he goes, let's listen.

CSQ	Gemini 12 CSQ
S/C	go ahead..
CSQ	The only thing we've got for you this pass is an S6.....experiment
S/C	What is it?
CSQ	It's a Midway area. It's a cloud photography. Time 74 47 24, that's yaw zero at pitch down 30.
S/C	.....time again CSQ?
CSQ	The time was 74 47 34?
HOU	24
S/C	Delta time CSQ, I'm reading you 35.
CSQ	Roger.
S/C	Copy, you would like a count from us. I copy, you want a count from us, affirmative?
CSQ	Roger.
S/C	.....CSQ?
HOU	Come in CSQ.
CSQ	Go ahead

HOU Go ahead

CSQ Houston, he's completely powered down, he's got the B pumps on.

HOU He's got the B pumps on?

CSQ flight

CSQ Go ahead

HOU Just for the record we ought to have that Delta P circuit breaker on when the crew is ready to do it.

CSQ Do you want me to have them turn the Delta P circuit breaker on?

HOU Affirmative. When they are ready to.

CSQ Okay

CSQ 12 CSQ

S/C Go ahead

CSQ You can go ahead and turn the Delta P circuit breaker on.

CSQ CSQ is one minute to LOS

S/C November Delta Tango

CSQ LOS on Gemini.

HOU CSQ are you copying that Tango?

CSQ Roger. Flight. A term the question the people are working in loops.

HOU Say again.

CSQ I say, somebody's working on the circuit.

And this is Mission Control Houston at 74 hours 37 minutes and 30 seconds after liftoff. We have had loss of signal on Gemini 12 from the

tracking ship Coastal Sentry. During that pass instructions pointing instructions for an S6 synoptic weather photography experiment picture were passed up to the crew. Near midway Island at an elapsed time of 74 47 24. This is about 10 minutes from now. Gemini 12 will be acquired by the Hawaii tracking station in approximately 9 minutes. At 74 38 minutes and 16 seconds after liftoff this is MIssion Control Houston.

END OF TAPE

This is Mission Control Houston, 74 hours, 49 minutes and 4 seconds after liftoff. Should be acquired by the Hawaii Island tracking station at any moment. Standing by for indications from the spacecraft communicator out at Hawaii, Keith Kundel. He is putting in a call now, let's listen in.

HAW Gemini 12, Hawaii standing by.

S/C Roger.

HAW And he has closed the Delta P circuit breaker.

HOU Roger.

HAW He said that the power relay would not reset on the Agena, so we sent the command.

HOU Roger.

HAW Pilots internal lead indicates that is loose. At least we are not getting anything out of it.

HOU We had that earlier.

HAW Okay, just thought we would check on it.

HAW Okay, he just turned the OAMS control system back on again.

HOU Roger

HAW Playing the tape dump on Gemini.

HOU Roger

HAW Gemini 12, Hawaii, one minute to LOS.

S/C Roger.

HAW LOS Hawaii, all GO.

HOU Roger, Hawaii - see you next pass.

And this is Mission Control Houston. We have had loss of signal at the Hawaii station. In approximately one minute the spacecraft Gemini 12 will be coming across the California, Guaymas, Texas acquisition areas. However, it will not be what you would call a stateside pass in that they stay off shore during this pass in the Pacific and eventually cross the West coast of South America at approximately Bolevia. They will not come over the stations of the Eastern Test Range. This will also be the last stateside pass of the evening. Let's join the conversation.

HOU Gemini 12, Houston at California - over.

S/C Roger - Gemini 12.

HOU Okay, I've got your sunset time for your

.....

END OF TAPE

HOU	Okay I've got your sunset time for your T2 mode A sequence 1 if you are ready to copy.
S/C	Go ahead
HOU	Roger. 75 + 15 + 01
S/C	Roger
HOU	And you can turn your x-ray on Beta with mag and leave it on for the rest of the night please sir.
S/C	Okay
HOU	And that's it, we're standing by.
S/C	Roger.
HOU	Guaymas go remote California go local
GYM	Guaymas remote
CAL	California local

This is Mission Control Houston again. A fairly quiet pass this time over the states or over the stateside stations at any rate. So far the only conversatinn is involved updating on sunset time of the upcoming T2 Space sexton experiment. The experiment is scheduled on the flight plan for 75 hours 18 minutes ground elapsed time and it will be measurements angular measurement with the sexton between the stars Betelguese and Rigel. The ground measured angles are 18.6 degrees and an earlier measurement with the sexton in the mission they have come up with measurements out to 3 decimal points. 18.611 with the sexton which is pretty close probably more accurate than the ground measurements. We'll continue

to monitor the air/ground during this final stateside pass of the evening for any further conversation.

HOU 12 Houston

S/C Go ahead

HOU Roger, after you get these readings this time if you could pass those to CSQ we'd like to look at them tonight to influence what we give you tomorrow with respect to the T2.

S/C Okay. we'll give it a try.

HOU Okay and I thought you ought to know that we've got the big TR clock started up and counting on' the board. It's 18 53 58 and counting down.

S/C Sounds good.

CSQ Texas go remote Guaymas go local

HOU Texas remote

GYM Guaymas local

HOU 12 Houston, one minute to U.S. LOS

S/C Roger

HOU Have a pleasant evening.

S/C A night on the town.

HOU Tonight is the big fight here in Houston between Clay and Williams. We'll keep you advised.

S/C It is tonight.

And this is Mission Control Houston. Apparently we've had loss of signal off the lower edge of the Texas station. Gemini XII will pass at the very extreme northern hitch of the Rose Knot tracking

acquisition area. The elevation angle during this pass will be .25 degrees which is just barely over the horizon. At 75 hours 9 minutes and 41 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 75 hours 43 minutes and 4 seconds after lift-off. Gemini 12 is coming up over the Tananarive voice remoting station. We will stand by for any transmission from Mission Control here through the Tananarive station. The pass over the Tananarive station will last about 8 minutes and 12 seconds. The crew should be beginning their eat period at approximately 7 minutes. Retrofire clock here in Mission Control now shows 18 hours 15 minutes and 35 seconds until retrofire. Still standing by for any possible air-to-ground communication through Tananarive. Here we go.

HOU	12, Houston standing by Tananarive. Houston, Gemini 12.
S/C	Roger, copy.
HOU	Okay, are you busy?
S/C	Well, we are trying to fix it...stow to get ready for dinner.
HOU	Okay, I got a couple of things if you can copy, if not we can give it to you at CSQ.
S/C	I will get it at CSQ, Pete.
HOU	Okay. 12, Houston. You need not acknowledge, but right now CSQ air-to-ground, both transmitters are out and they may not be up on your pass over them.
S/C	Roger, understand, CSQ is out at this time.

HOU Yes. (PAUSE) 12, Houston. One minute until LOS Tananarive.

S/C All right.

TAN Tananarive LOS.

And this is Mission Control, Houston. We have had loss of signal through the Tananarive voice remoting station. The next station pass will be the Coastal Sentry in approximately 15 minutes. Meanwhile, the present weather in the prime landing area in the Western Atlantic, we have scattered clouds at 2500 feet, winds from the north at 13 knots, visibility 10 miles, waves 2 feet high, no swells. Forecast for tomorrow in the prime landing area, 2000 feet scattered broken, - scattered to broken clouds, wind out of the north at 15 knots, 10 miles visibility, 4 foot waves, 5 to 7 foot swells. A weak cold front is due to pass through the prime landing area early Tuesday morning. At 75 hours 53 minutes and 9 seconds after lift-off and 18 hours 6 minutes 46 seconds until retrofire, this is Mission Control Houston.

This is Mission Control Houston. For the world-wide weather outlook, we have with us this afternoon, Mr. Ken Negler, of the U. S. Weather Bureau. He (tape skips) - composite of satellite series of photos of weather. Ken, that looks like

the Indian Ocean area. Is that correct?

NEGLER Yes, this is the Indian Ocean area. A picture taken earlier today by the ESSA III satellite. Now in our weather support of manned missions, we have used weather satellite information for a number of years. But this is a new form of this data. A mosaic whereby the data is printed out in map form and it turns out to be very usable. Here, in the - this is the Arabian pensula here, Africa, and this is the remanents of a tropical storm, a typhoon which moved from the Arabian Sea into Arabia. And here, over India, is another tropical storm which moved in and is dissipating over India today. As you can see, you can very clearly make out the ocean and continents on this new mosiac. Here is another map, this was taken yesterday afternoon of the North Atlantic area. Here we have drawn on the continental boundaries, because they didn't show up quite so well, but this shows the type of very broad coverage that we can see each day, from the weather satellite.

NEGLER Of interest here was the frontal weather that we had moved through yesterday. This has cleared out. Today of course. And this is a disturbance in the Central Atlantic that we have been watching, but it is well to the east of our landing area out there. We just thought this would be rather interesting because it does give us such a very broad view of the cloud systems and all around the world, each day.

MISSION CONTROL In all likelihood, then, the crew of Gemini 12 has been photographing these areas in the S-6 Synoptic Weather Photography experiment. This should be quite interesting to see when they get back. We thank you a lot, Mr. Negler, and we will be talking to you later as we approach splashdown tomorrow morning. This is Gemini Control.

END OF TAPE

This is Mission Control Houston, 76 hours, 5 minutes, 44 seconds after liftoff. Spacecraft Gemini 12 has just been acquired by the tracking ship Coastal Sentry South of Japan. During this pass over the Coastal Sentry there is a series of planned landing updates that will be passed up to the crew. Purge of the fuel cells and a readout of cryogenic oxygen remaining. We will standby for the conversation... there it starts.

CSQ Gemini 12, CSQ.

S/C Roger.

CSQ Go ahead, start your fuel cell purge whenever you are ready. Section 1 and then section 2. Regular purge.

S/C One and then two.

CSQ And I've got a PLA update for you and also a flight plan update.

S/C You want to give me the flight plan update, Mike.

CSQ Okay.

S/C .... garble ...

CSQ Cryo 75 5920 - 4889. .2 degrees East - right Ascension. 10 hours, 17 minutes. 761614 S-6 yaw left 43 degrees, pitch down 30 degrees - Marcus Island. 762233 S-6 yaw 10 degrees, pitch down 30 degrees - Midway Island. 76:28:26 S-6 yaw right 0 degrees. Pitch down 30 degrees - Hawaii Islands. That's the end of the update.

S/C For the S-6 yaw left

CSQ The second S-6 was yaw 0 degrees, pitch down. The first one I gave you was yaw left 43 degrees.

S/C Roger - have it.

CSQ The spacecraft ... Flight

HOU Roger

S/C ..... 2 minute purge check.

CSQ That's affirmative.

S/C. ....

CSQ Okay, 49-3 Alpha. 77:21:04 ... 0 + 38, 26 + 16. The bank angles for all areas are roll at 85, roll right 95. The weather is good in all areas. Area 50-3 Alpha 78:56:38 30 +28 25 + 58, Area 51-3 bravo 80:32:16 20 + 02, 25 + 30, Area 52-CC 82:06:10, 19 + 44, 25 + 09. Area 53-AC 83:02:46, 20 + 14, 26 + 05. Area 54-AC 84:36:59, 20 + 25, 26 + 13. Area 55-A 86:12:39, Uh delay that, that's 86:42:36, 20 + 36, 26 +20. That will be the update.

S/C Roger, have them all - thank you.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ Okay, the purge is going good, we're just about finished.

HOU Okay. Glad to hear you have your air-to-ground.

CSQ Got some good techs out here.

CSQ Flight, CSQ

HOU Go ahead

CSQ Uh, we show the Agena ... load reset.

HOU Roger - Okay, have you got everything down then except T-2.

CSQ Say again Flight.

HOU Did you get all your pass side completed.

CSQ I have not got the cryo readout yet. I'll wait until they finish this purge.

HOU Okay, and then see what you can get on T-2, he said he would try to read them down over your site.

CSQ I can't read you too well Flight.

HOU And he also said he would try to read you the T-2 numbers.

CSQ P-2 numbers?

HOU Tango 2 numbers.

CSQ Okay

CSQ Would you put the cryo switch to O_2. We are standing by to copy the T-2 numbers if you get a chance.

S/C Roger, we switched to O_2.

CSQ Okay, would you go to H_2.

S/C ..... pressure reads 75. +2 00 +37 ... 25 ... 50 55 ... .5 ..... 45 ... 105 ....438 38 ... 18.04 .... 05 ... B ... 08 4 .... 05 (fading)

HOU CSQ, Flight.

CSQ Go ahead Flight.

HOU Did you get all the way through it.

CSQ Negative, I got LOS here. I copied a part of it, didn't copy all. The air-to-ground was pretty rattie.

HOU Okay, send in what you have.

CSQ Roger, will do.

And this is Mission Control Houston. We have had loss of signal at the tracking ship Coastal Sentry. Coming up on Hawaii in approximately 9 minutes. We will standby and come up again at that time. At 76 hours, 15 minutes, 41 seconds after liftoff, and 17 hours, 44 minutes, 14 seconds until retrofire, this is Mission Control.

END OF TAPE

This is Gemini Control 76 hours 24 minutes 3 seconds in to the mission of Gemini XII. Gemini XII spacecraft is approaching the Hawaii tracking station we should hear comments between the crew and Hawaii at that time. Hawaii should acquire the spacecraft as of 1 second ago.

That's affirm

HOU Okay we've got initial contact, still pretty shakey.

HAW Rog.

HAW .....just taking pictures here.

This is Gemini Control we've had no voice contact yet with the Hawaii station, but we should be completing.....

HAW Hawaii.

S/C Go ahead Hawaii, 12 here.

HAW We were having LOS on the CSQ could you give another readout on your T2 experiment? Please.

S/C Roger, did you copy any of it?

HAW Oh, we might have gotten some of it let's do the whole thing over again.

HOU Hawaii AFD

HAW Go

HOU Like all the Agena sums at your LOS

S/C Okay, the reference time is 75 12 00, first measurement 05 elapsed time 08 14 1/2. Give you the last

two numbers. 95 95 95 05 03 star to star measurement 18.604 the remaining will be the last two numbers 05 08 05 09 04 05 06 06 05 04 05 06 04, did you copy.

HAW That's affirmative 12, thank you.

S/C And the last measurement elapsed time from the reference 29 11 point zero.

HAW Roger

S/C And at the 05, the reason for jump the first three to the last two is that the cog seems to hang up in the vicinity of zero and it jumps across there if your're very careful, I'll have to look at that a little bit more.

HAW Roger. Thank you.

HOU Hawaii AFD

HAW Stand by. Okay, go ahead, I was trying to make sure I got it all copied down while I still remember.

HOU Okay, did they get the H2 heater on to raise the pressure, then go back to auto?

HAW Negative, not as yet. As far as I know on the H2 stand by one.....Okay we're showing 265 on H2 which is up pretty high.

HOU Say again the number

HAW 265 PSI

S/C 12 Hawaii, could you give us a PQI please.

HAW its....about 23 or 24 percent

S/C Roger, thank you.

HAW What do you think AFD

HOU Go ahead

HAW Do you still want to bump it up higher?
We don't think the heaters on here.

HOU Bill, get us a crew status report here before you lose them.

HAW Rog.
Okay, the crew status reports verify the H2 heater is in auto.

HAW Gemini 12 Hawaii, would you verify the H2 heater is in auto.

S/C Roger, it's in auto, do you want us to at this time run it up to 667 right?

HAW Rog. And we'd like a clear status report.

S/C The drink counter is 2074. We haven't had a change of pressure yet. The pilot has eaten three meals today, the command pilot only two since he was trying to find Hawaii all this time. And I'll try and get at it as soon as I can. And no sleeping so far today.

HAW Okay, thank you much.
12 Hawaii we'll have LOS in about a minute here and we would like to say Good Night from the Garden Island of Hawaii.

S/C Thank you. Garden Island.

HAW Aloha

S/C Rog.

This is Gemini Control, we will have no further conversation from the crew this evening. They are now in their sleep period at 76 hours 32 minutes 20 seconds in to the mission. The wakeup time should be about 84 hours 30 minutes. A short recap, the weather in the west Atlantic landing area as you heard before is anticipated to be good for tomorrow. The planned landing time .....you just heard the crew status report, the pilotate three meals, the command pilot ate two meals today. The H2 heater is on automatic position, the PQI as it is referred to or the propellant quantity in the OHMS orbittal attitude maneuvering system stands at 23.4 percent. The spacecraft is in good shape everybody said good night to them, they are now in a sleep period. At 76 hours 33 minutes 14 seconds in to the mission this is Gemini Control....

END OF TAPE

This is Mission Control 77 hours 3 minutes (skipped)..1 seconds into the mission of Gemini 12. The position of this Gemini 12 spacecraft presently is over the South Atlantic. The Tananarive tracking station should acquire at 77 hours 10 minutes 23 seconds. The crew entered their sleep period at 76 hours 32 minutes, which is a half an hour ago. Presently, in MCC we have the White Team on duty. This is the only team in the history of Gemini, I believe, that changed its color in the middle of the mission. We started as the Blue Team. We are now the White Team. Gene Kranz is acting as Flight Director. We have relieved the Black Team. Astronaut Gordon Cooper is presently in the Control Center conversing with Bill Anders and with Gene Kranz on the flight. During the sleep period, the D-10 Ion-sensing attitude control equipment will be on in mode foxtrot, for random data during drifting flight during this sleep period. The Flight Director has checked out his controllers; all controllers indicate that systems look okay. The fuel cells are operating in good condition. This is the last night and the last flight in the Gemini Program. 77 hours 4 minutes 55 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control 78 hours 3 minutes 31 seconds in to the flight of Gemini 12. The position of the spacecraft is in the acquisition area of the Hawaii tracking station. The pilots entered their sleep periods one hour and one half ago at 76 hours 32 minutes in to the mission. We have had no voice contact with them since that time. The Hawaii tracking station reports the command pilot is asleep, the pilot is probably awake at this time. At 78 hours 4 minutes 6 seconds in to the mission, 15 hours 55 minutes 48 seconds until retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control, 78 hours, 24 minutes, 5 seconds into the mission of Gemini 12. We have come up to a position here now where the Flight Director Gene Kranz, because of the hydrogen pressure in the fuel cell system, has decided that he should wake the crew up at the Rose Knot tracking ship on the West Coast of South America and request the pilot to check to be sure that the hydrogen, the H_2 switch is in the Auto position. We are standing by now for the Rose Knot contact with the astronauts in Gemini 12.

RKV

HOU Okay, Bill, after you are through with that if the crew has time, if Jim comes up, ask them since they are awake, you could have them give you a 30 second O_2 purge.

RKV Roger. ... 04 reads 350.

HOU 350

RKV That's affirm.

HOU Okay, wait until you get about another 30 seconds in your pass and then wake the crew up.

RKV Roger -They don't look like they are asleep.

HOU Okay.

This is Gemini Control, in about 28 seconds the RKV will wake the crew up and you heard the instructions given by Gene Crance, the Flight Director, we are now awaiting that time to find out about the H_2 switch.

RKV Gemini 12, RKV.

RKV Gemini 12, RKV.

S/C Go ahead RKV.

RKV Hate to bother you Gemini 12, but your H_2 looks like it is building up a little bit. Would you verify the position of the H_2 switch as being OFF.

S/C That's right it is OFF, we noticed the same thing .....

RKV Okay, would you place the H_2 switch to OFF.

S/C It's off.

RKV Roger, apparently .....

HOU[RKV Com Houston Flight

RKV Roger - standby one. - Go ahead Flight.

HOU Roger, did he place the switch to OFF when you ask him, or did he have it off.

RKV He had it in Auto, and the pressure was still building up, and then he placed it to OFF.

HOU Okay, while you got them, you might as well ask them for a 30 second fuel cell purge, O_2 purge there, and you can tell them we will watch it for the next rev.

RKV Gemini 12, RKV

S/C Go ahead

RKV Okay, we are sorry we woke you up, give us a 30 second O_2 purge, and leave your H_2 switch in the OFF position now, and we will be looking

at it through this next rev.

S/C Roger.

This is Gemini Control. You heard that exchange between Gemini 12 and the Rose Knot tracking ship. The Gemini 12 crew was advised that on the Automatic position for the H_2 switch pressure was building up in the hydrogen system so they were advised to cut the H_2 switch off. This they did, they had an O_2 purge and Gene Kranz, the Flight Director advised RKV to advise the crew that we will watch it for the next revolution. The reactant supplies for the fuel cells are located in the adapter section in vaccum insulated containers. These containers store hydrogen fuel, which is the fuel for the fuel cells and oxygen and these are stored at super-critical pressures and cryogenic. Cryogenic are very extremely low temperatures. Heaters are employed in the system to energize and have a slight rise in temperature which causes the liquid to expand since these gases are stored in the liquid state. When the expansion takes place in those tanks the pressure rises and the gas molecules combine with the liquid molecules into a homogenous state. When those heaters remain on, naturally, as I said, the pressures continue to rise, causing venting of the system. We do not desire to have the hydrogen system vent too much. We are watching it for one more pass at 78 hours, 29 minutes, 51 seconds into the flight, this is Gemini Control.

END OF TAPE.

This is Gemini Control 79 hours 3 minutes 31 seconds into the flight of Gemini 12. The Gemini 12 spacecraft has just left the east coast of Africa. The Coastal Sentry tracking ship should acquire the spacecraft at 79 hours 17 minutes 6 seconds into the mission. To recap a little bit on our fuel cell problem, it was noticed a short while ago about 25 minutes ago over the Rose Knot ship or around that time, when Rose Knot had acquisition, that the hydrogen tank pressure was high in the fuel cell system. Gene Kranz, the Flight Director, directed that Rose Knot inquire of the astronauts if the H_2 heater was in the automatic position. This was done. The astronauts indicated that it was in an automatic position and the pressure was still high. This possibly could indicate a malfunction in the switch. We don't know at this time. There was a further exchange with the astronauts over the Rose Knot where it was indicated that they should cut the circuit breakers off on the heaters and Gene Kranz advises that with the pressure in both the oxygen and the hydrogen system at their present level, they are high enough to sustain the fuel cells through the night and through the mission. So it does not appear as we have an occasion or will have an ocassion to wake the crew again. We are keeping a close look on it and we will advise you if there is any further happening in that direction. Gene Kranz also advises the Rose Knot that they have a singular

position out there, because this is the third night in a row where the crew was awakened prematurely. At 79 hours 5 minutes 36 seconds into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

This Gemini Control. 80 hours, 3 minutes, 30 seconds into the flight of Gemini 12. Gemini 12 is just coming over the Western Coast of South America. RKV our Rose Knot tracking ship has acquired the vehicle. He reads out that the spacecraft is GO. The sleep period was entered at 76 hours and 32 minutes into the mission and will end at 84:45. All of this is not sleep time however, they were awaken once shortly after the sleep period was announced. They have gone to sleep though. Our doctor advises here in the Control Center at 79 hours approximately, the pilots entered a sleeping state. Heart rates are - for astronaut Lovell 50 beats per minute, astronaut Aldrin 45 beats per minute. Respiration for Lovell 15 per minute, Aldrins 10 per minute. Our present apogee is 157.5 nautical miles, present periogee 142.9 nautical miles. A short recap on the situation that happened with the fuel cells might serve a purpose. It was noticed in the last revolution, revolution 49, that the hydrogen tank pressure fuel cell was not too high, but tending to go high. It was also indicated that we should wake the crew up by Gene Kranz, Flight Director, indicated we should wake the crew up and have them check that the H_2 heater was in the Automatic position. This was done at Rose Knot tracking ship, on the last pass. The heater was in the Automatic position so Mr. Kranz had them turn off the heater. The pressure in both oxygen and hydrogen systems are sufficient to complete this sleep period and also we have enough in both systems to complete the mission for that matter. The heater circuit breakers have been

and both tanks have been pressurized to that extent. We have 30 percent roughly of hydrogen left, which is a comfortable quantity, and at this time there is certainly no cause for concern. At 80 hours, 6 minutes, 31 seconds into the mission this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 11:50 PM CST

This is Gemini Control, 81 hours, three minutes, 30 seconds into the mission of Gemini 12. The Gemini 12 spacecraft is over the west Pacific Ocean at this time. The next contact by telemetry will be with Canton station at 81 hours, nine minutes, 52 seconds into the mission. The astronauts are in a sleep period. They are asleep. We have had no voice contact, therefore, with them. They have been in this period for some four hours, 35 minutes. Their wake-up time is scheduled to be 84:45 -- 84 hours, 45 minutes. The fuel cell pressures and quantities for the hydrogen and oxygen systems have settled down very satisfactorily. The H_2 pressure currently is 334 pounds per square inch. Quantity -- 30.9 per cent. Oxygen is 820 pounds per square inch. Quantity -- 19.6 per cent. This is very satisfactory. Gene Kranz, the flight director, indicates that at this time Gemini 12 is go. At 81 hours, four minutes, 48 seconds into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 82 hours, three minutes, 31 seconds into the flight of Gemini 12. The current position of Gemini 12 is just passed over the west coast of Africa. The Kano tracking station has telemetry acquisition at this time. We're in a sleep period still, some four hours and 35 minutes into it. Wake-up time is 84 hours, 45 minutes. Our fuel cell hydrogen and oxygen pressure and quantities are much the same as the last report. That is, for the hydrogen -- 334 psi pressure. Quantity -- 30.9 per cent. Oxygen -- 820 pounds per square inch. 19.6 per cent. We have a good box score so far on this last flight in the Gemini program. We have accomplished rendezvous and docking. We have accomplished the tether exercise. We have accomplished two stand-up EVA's and one umbilical EVA. We have accomplished our experiments. We have not accomplished our 400-mile apogee over the United States because we did not have a primary propulsion system burn on the Agena. Tomorrow, hopefully, we will accomplish also the automatic reentry of our spacecraft Gemini 12. The weather in the prime -1 area is satisfactory. We have scattered clouds forecast at 2500 feet. The wind 350° or roughly out of the north at 13 knots. We have ten miles visibility forecast. We have four-feet waves forecast, and we have five to seven-foot swells forecast. That is certainly satisfactory weather for the prime landing area. At this time in the mission, all goes well with Gemini 12. This is Gemini Control at 82 hours, five minutes, 49 seconds into the mission.

END OF TAPE

This is Gemini Control, 83 hours, three minutes, 31 seconds into the flight of Gemini 12. Our position is approaching west coast of South America. Acquisition by Rose Knot tracking ship should occur within approximately six minutes. The astronauts are still in a sleep period. They should be awakened in approximately one hour, 40 minutes from this time. We have some readouts on the fuel cell hydrogen and oxygen systems here. The H_2 pressure now stands at 327 psi -- pounds per square inch. Quantity -- 30.1 per cent. The oxygen pressure -- 790 pounds per square inch. Quantity -- 18.8 per cent. This is well within the ball park. The flight director, Gene Kranz, is well satisfied with these readings. We have an update on our flight plan -- a tentative update on our flight plan for today. At 84 hours, 45 minutes, over the Rose Knot, the X-ray will be turned off and the beta spectrometer turned off. They will begin their eat period. At 85 hours, 10 minutes, Canary Islands. The S-3 unit will be fixed on mark. They will purge fuel cells two then one. The cryogenic O_2 and H_2 readouts and the cryo read off. The flight plan update -- planned landing area update. At 85 hours, 40 minutes, they will end their eat period. At 85 hours, 45 minutes, the T-2 manual navigations star sightings experiment -- mode A, sequence two. At 86 hours, 20 minutes, they will load module four. At 86 hours, 30 minutes at Antigua, they will have a crew status report. At 86 hours, 40 minutes, the S-6 synoptic weather experiment. At 86 hours,

50 minutes, the S-5 mode A,sequence four synoptic terrain photography experiment. At 87 hours, 15 minutes, we will have another T-2 manual navigation star sightings, mode A,sequence two experiment. At 87 hours, 50 minutes, we will have more S-6 synoptic weather photography. At 88 hours, five minutes over Antigua, they will pass up thruster test procedures and turn A pumps on. At 88 hours, 10 minutes, more S-6 synoptic weather photography. 88 hours, 25 minutes, more S-5 synoptic terrain photography, mode A, sequence four. At 88 hours, 40 minutes, they will power up the platform of Gemini 12. 88 hours, 45 minutes, the T-2 manual navigation star sightings experiment, mode B, sequence one. 88 hours, 50 minutes, at Carnarvon, purge the fuel cells, section one then two. Cryogenic O_2 and H_2 readouts. 89 hours, 20 minutes, the platform will be aligned. 89 hours, 40 minutes, the D-10 ion sensing attitude control experiment in mode G. 89 hours, 55 minutes, thruster test. At 90 hours, 30 minutes into the flight, they will stow equipment. 91 hours, 30 minutes will be an eat period until 92 hours, 30 minutes when they will begin retro preparations. All looks well in the recovery area as far as weather goes. We have a forecast which shows waves one to two feet. Wind out of the north at eight knots. Visibility 10 miles, the cloud base 2000 feet, scattered. That looks like ideal weater in the recovery area. At 83 hours, eight minutes, 18 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 2:50 AM CST

Gemini Control, Houston, 84 hours, three minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin in their sleep period -- the final stages of their sleep period are now passing within acquisition range of the Coastal Sentry Quebec. This is an interesting landmark in the flight of Gemini 12 and in the Gemini program in that this will be the last pass made over the CSQ in Project Gemini. The Gemini 12 spacecraft is now in its 53rd revolution at this time. Its apogee, perigee readings are 157.3 for apogee, 142.9 for perigee. Meanwhile in Mission Control Center, Houston, we are undergoing a change of flight control teams. The green team of flight controllers is now aboard and ready to take over from the white team which will be relieved momentarily. At 84 hours, five minutes into the flight of Gemini 12, the final flight of the Gemini program, this is Gemini Control, Houston.

END OF TAPE

Gemini Control Houston, 84 hours, 50 minutes into the flight of Gemini 12 now. The decision was just made in the Control Center to awaken the crew over the Rose Knot Victor. The RKV is talking to the crew now and let's pick up that conversation.

S/C ...one telemeter is off, so we concur and we'd like to go over to zero.

RKV Roger.

HOU RKV, you might as well get his X-ray and Beta off and go ahead with the eat period since they are awake.

RKV Okay. 12, as soon as you get a little bit awake here, I've got some information for you.

S/C Okay.

RKV Would you turn your X-ray and Beta off?

S/C X-ray and Beta going off.

RKV Roger. When you get over Canarys the next pass, at 85:06:00, they'll have a flight plan and PLA update for you.

S/C Roger. Flight plan update and PLA update.

RKV Roger, that's it.

HOU RKV, Houston Flight.

RKV Go Flight, RKV.

HOU We would like to get a 30 second O_2 purge at this time, both sections.

RKV Roger.

RKV 12, RKV.

S/C Go ahead.

RKV Roger, we'd like to get a 30 second O_2 purge at this time on both sections.

S/C Roger, 30 second purge both sections coming up.

RKV Roger.

HOU RKV, Houston Flight.

RKV Go, Flight.

HOU You might remind them to go ahead and start eating.

RKV Roger. Okay, 12, when you -- at your convenience, you can start your eat period and I think it's planned between now and 80-- 85:25:00.

S/C Roger.

RKV And you are about one minute to our LOS, and I just want to say Adios, see you at the Apollo program.

S/C Roger, thank you very much. You've been a help all through the flight.

RKV Agena TM off.

Flight, we didn't get the complete purges. We didn't copy them in real time.

HOU Okay.

RKV We had to get the TM off. We have LOS both vehicles. Both vehicles go.

Gemini Control Houston. We've just had loss of signal with the Rose Knot Victor. As you just heard, the crew was awakened over the Rose Knot Victor. They are now performing a fuel cell purge, and as was indicated last night, or yesterday evening, in the commentary, the final night of sleep for a Gemini crew in space was interrupted -- interrupted by a buildup in hydrogen tank pressure. To alleviate this problem, the crew was awakened and pulled their circuit breakers which in turn stabilized this pressure. The pressure reading had gotten up to 337 psi. There was some concern that a buildup beyond 350 psi might cause the hydrogen to vent, which we did not want to happen. The hydrogen tank pressure is -- has since stabilized. At our last reading over the Rose Knot Victor indicated 317 psi, so we are in good shape. In Mission Control, Cap Com Bill Anders is now aboard. Bill Anders, who has talked to the crew through the three EVA's of this mission, again is wearing cowboy boots to work. This has become quite a tradition here in the Control Center. Pete Conrad, the other Cap Com, has traditionally worn his billed cap, which he had aboard the recovery ship following Gemini 11. Our next station to acquire will be Canary. Acquisition time is 85:05:26. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 85 hours, 5 minutes, into the flight of Gemini 12 at this time. We are approaching acquisition with the Canary tracking station. We are in the beginning of the 54th revolution. We expect contact with the Gemini 12 crew momentarily, and we are standing by for that contact.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, you have any questions?

CYI Negative.

HOU Okay, just go ahead in real time on this flight plan update until you get to 85:45, so he doesn't have to copy all that jazz. In other words, do the fuel cell purge, the S-3. Copy?

CYI Copy.

[illegible] Gemini 12, Canary Cap Com.

S/C Go ahead, Canarys.

CYI Good morning.

S/C How are you?

CYI Fine thank you and you?

S/C Well, we had another fuel cell stack went out, that's all.

CYI Roger. We've got a special fuel cell purge we want to pull here. We'd like to do a 30 second O_2 purge on section 2.

S/C A 30 second O_2 on section 2, roger. We just did a 30 second O_2 on both sections.

CYI Roger, they want another one.

S/C Roger, another one on section 2.

CYI And when you finish that one, then we'll do 30 seconds more on section one O_2 purge.

S/C Two 30 seconds coming up, on section 2.

HOU Canary, from Flight.

CYI Go ahead, flight.

HOU Can one copy while one purges?

CYI Roger. I thought you wanted to step through this purge, though?

HOU Yep.

CYI Okay.

HOU We've got a lot to do.

S/C Section 2. You ready for one now?

CYI I've got a lot of stuff for you to copy, if you can copy while we're purging here.

S/C Go ahead.

CYI Okay, I've got a notal update. Time 83:28:29, rev 53. 25.8 degrees west, right Ascension, 10 hours, 07 minutes.

S/C Okay.

CYI Okay, we'd like a 12 second H_2 purge on section 2, then 12 seconds on section one.

S/C Twelve seconds on 2, then 12 on 1.

CYI Roger. Okay, I've got some flight plan updates here for you.

S/C Okay.

CYI 85:45; T-2, load A, sequence 02. 86:20, load module 4. 86:29 at Antigua, crew status report. Okay, now on the purge, we'd like a 90 second O_2 purge on section 2 followed by a 90 second O_2 purge on section 1. Gemini 12, Canarys.

S/C Go ahead.

CYI Okay, we'd like to fix unit 2 of the S-3 experiment on your mark. Roger, stand by for the mark.

S/C Roger, you ready?

Ready.

S/C Fix the unit 2, 3, 2, 1, Mark.

...(garbled)

CYI Okay, we've got that. Okay, I'll continue the flight plan update here. At 86:44, S-6, sequence 01, north of track. 86:54, S-5, mode A, sequence 04. 87:15, T-2, mode A, sequence 2. 87:57, S-6, sequence 08, south of track. 88:15, S-6, sequence 07, strip photos, north of track. 88:30, S-5, load A, sequence 04. At 88:40, powerup platform. At 88:45, T-2, load B, sequence 1. At 88:51, at Carnarvon, purge fuel cells, section 1, then 2. At 89:20, align the platform. At 89:40, D-10, mode G; we've got about 30 seconds to LOS, so I'll stop here. We'll pick up the rest of it later.

HOU Kano go remote.

S/C Roger, I copied.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston, Cap Com through Kano, over.

S/C Roger, Houston through Kano.

HOU Good morning. I'd like to give you this PLA block update, now, Jim.

S/C All right, stand by.

HOU Gemini 12, Houston Cap Com, over.

S/C Go ahead.

HOU Roger, you ready to copy a PLA block?

S/C Righto.
Send it up.

HOU Roger. Area 56, Alpha, Charlie. 87:49:32, 20 + 34, 26 + 19, 57 - 1 Alpha. 89:13:48, 20 + 36, 26 + 24, 58 - 1 Bravo. 30:49:24, 20 + 36, 26 + 19; correction to 58 - 1 Bravo. That's 90:49;24.

S/C Houston, number GETRC?

HOU That's GETRC for 58 - 1 Bravo. We have 30 seconds to LOS. We'll pick up the rest later, Gemini 12.

S/C Roger.

HOU And, were you able to complete your purge?

S/C Roger, purge is complete.

HOU 30 seconds to LOS.

KNO Kano has LOS.

Gemini Control Houston. We've had loss of signal over Kano. We are out of range of Kano now. During this pass, we've passed both over the Canary Island station and went immediately into Kano where Cap Com Bill Anders talked -- remoted through that African station. The S-3 referred to in the pass over Canary is the S-3 experiment. That's the frog egg growth experiment. On the time hack or mark you heard given by the Canary Cap Com, the crew activated a lever or actuated a lever for the second frog egg unit. The first unit was activated midway through the Gemini 12 mission. This is the second of two units. We'll be a long time now before we have our next station contact. Next station contact as a matter of fact is over Antigua and this is at 86:hours, 29 minutes, and 1 second GET. Over an hour from this time. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 3 minutes into the flight of Gemini 12 at this time. The Gemini 12 spacecraft with its crew of Jim Lovell and Buzz Aldrin is now passing over the south Pacific well out of range of tracking stations at Canton and Hawaii, and during this quiet pass, we have preliminary times for the retro sequence, which is scheduled for early this afternoon. The GET for retro that we are looking at at the present time, is 94 hours, 1 second. Time for retro adapter separation would be time of retro plus 45 seconds. Time for 400,000, 400 K, would be retro plus 20 minutes, 10 seconds. Time to begin blackout, retro plus 22 minutes, 21 seconds, time for end of blackout, retro plus 27 minutes, 19 seconds. Time for 50 K, drogue chute deploy, retro plus 29 minutes, 7 seconds. Time for main chute deploy, retro plus 30 minutes, 49 seconds. Time for splash, retro plus 35 minutes, 10 seconds. Weather advises that weather conditions in the prime recovery area in the western Atlantic, this is recovery area 60-1, are satisfactory for splashdown this afternoon. We forecast partly cloudy skies with very isolated showers in the vicinity of the aiming point area, with winds at -- to be northerly at 15 knots and wave heights 3 to 4 feet. Our predicted weather in the prime recovery area appears almost identical to that which we had for the Gemini 11 splash. With the exception of our forecast wind direction. At 86 hours, 6 minutes, into the flight of Gemini 12, at this time, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 29 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition at Antigua. We're standing by for this pass. We expect a crew status report to take place during this pass. Standing by this is Gemini Control.

S/C Roger, Houston.

HOU Roger, if you have module 4 loaded you can turn your computer off, please.

S/C It's not loaded yet. Houston, we want to check a procedure with you.

HOU Go. Go ahead. Gemini 12, Houston. Go ahead.

S/C Roger, we've run out of water and we have put the squeeze bulb .... down below and opened up the valve next to the ... and we just want to check that our H_2O switch should go to the off position. Is that correct? We don't have that in the procedures book.

HOU We'll check it out for you. We'd like to give you a flight plan change in update if you're ready to copy.

S/C Go ahead.

HOU Roger, the item we gave you at 88:15 and 88:30 we'd like to have you delete them and substitute at 88:10 thruster test. Copy?

HOU Do you copy Gemini 12?

S/C Houston, did you say at 88:10 we'd have a thruster check?

HOU That's affirmative. I'll tell you about it later. Delete the items at 88:15 and 30. We're substituting them, at 89:50 do the S-6, at 90:06 do the S-5. Understand?

S/C Roger, stay in sequence?

HOU Okay, was the same S-6 and S-5 at the times we deleted.

S/C Roger.

HOU Okay, 90:30 stow equipment; 91:30 eat period; 92:05 Carnarvon, preliminary reentry update; 92:30 retroprep; 92:50 U. S. pass, update; 94:00 retrofire. Copy?

S/C Roger, was retrofire 94:00?

HOU That's rough. We'd like you to give us a 30-second O_2 purge on each section.

S/C Roger, 30-second O_2 purge in each section.

HOU And could you give us a crew status report?

S/C Pilot slept medium to good, five and a half hours; Command Pilot about four hours, fair; water gun count is 2215; Pilot finishing breakfast and Command Pilot has not had anything yet.... water.

HOU Roger, after you have module 4 loaded we'd like to have you turn the computer off.

S/C Right.

HOU And then turn your A pumps on. Copy? Gemini 12, do you copy? Computer off after module 4 loaded and then A pumps on.

S/C Roger, computer off and then A pumps on.

HOU Roger. I'd like to talk to you about this thruster check now. The configuration we would like to have you in is rate gyros on, FDI's rate scale low, attitude control direct. And using your OAMS thruster circuit breakers we'd like to have you fire each attitude thruster and fore aft maneuver thruster independently in order to establish a rate of approximately 1 degree per second on the FDI's. If you can't get these rates let the thruster fire for 25 seconds. We'd like for you to record the GET of the test for postflight correlation. Understand? Gemini 12, do you copy the thruster fire check?

S/C I'm trying to write it down.

HOU Don't write it down. We'd just like to have you add these - all the circuit breakers off and bring one of them on at a time and fire that thruster for either one degree per second or 25 seconds, whichever comes first.

S/C Roger, rate gyros on, FDI's rate scale low, attitude

control direct, we use OAMS thruster circuit breakers to fire each attitude and maneuver thrusters separately to get 1 degree per second or 25 seconds.

HOU Roger, we're only interested in the fore and aft maneuver thrusters, not the radio maneuver thrusters.

S/C Only fore and aft maneuver thrusters.

HOU Roger, and if this thruster check looks okay we'd like to do D-10 Mode G at 89:40 without the computer by having you fire one second in each lateral direction and then one second aft to take out the forward component. Copy? Gemini 12, did you copy? That's negative on the A pumps on.

S/C Okay, if you guys get together. Negative on the A pumps on, huh?

HOU Roger, let us change our mind. We'll give you that word on the water over Canary. Do you copy that about the D-10 Mode George?

ANT LOS Antigua.

Gemini Control Houston, 86 hours, 37 minutes into the flight of Gemini 12 at this time. The thruster check that the Gemini 12 crew will be going through is designed primarily, the philosophy behind it, is to gain data for post-mission analyses. As you will recall, we've had thrusters 2, 4 and 8 go out earlier in the mission of Gemini 12. Our next station to acquire will be Canary and that's 86 hours, 39 minutes, 41 seconds into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 39 minutes now into the flight of Gemini 12. We're coming within range of Canary tracking station at this time. We expect conversation between the Canary Cap Com and the Gemini 12 crew to be coming in very shortly and we're standing by for any conversation which might transpire.

CQU	... the four stacks are looking pretty good. The purges evidently helped over your site last time.
CYI	Okay.
CYI	Flight, Canarys.
HOU	Go ahead.
CYI	Okay, those Delta P lights are out. I don't know whether he's got the circuit breaker pulled or what. Want to find out about it?
HOU	Yes, you might ask him.
CYI	Gemini 12, Canary Cap Com.
S/C	Go ahead, Canarys.
CYI	Okay, we're going to try to get the water answer to you over our site here. Your four stacks are looking real good in the fuel cells. Evidently that purge we did last rev helped them out a little bit. And do you have the Delta P circuit breaker open at this time?
S/C	That's affirmative. We just finished checking them out.
CYI	Okay.

S/C (garbled)

CYI Say again? 12, I didn't copy.

S/C I pan it on for just a minute so you can see that the Delta P lights are still on.

CYI Rog. We got it.

HOU We don't have any preference on that Cap Com. If he wants to leave it open.

CYI He opened it back up again.
Flight, Canarys.

HOU Go ahead.

CYI Okay, we're back to sending the TX's again?

HOU Affirmative.

CYI Okay. 12, Canarys, sending you a TX.
Flight, Canarys.

HOU Go ahead.

CYI How far did we get on that PLA update over Kano last time? You want to finish it off now?

HOU We got down to 59 -1 Bravo.

CYI Okay, do you want to finish it off now?

HOU If it's convenient for them, why don't you go ahead and finish it off?

CYI Roger.

HOU If not, we can pick it up next pass.

CYI 12, Canarys.

S/C Go ahead.

CYI If it's convenient for you at this time, we can finish off this PLA update.

S/C It's not convenient at this time, Canarys.

CYI Okay, we'll pick it up next rev.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, we are a little confused about his query here. Trying to figure out what we copied, but we think his question was should the H_2 valve be to off and it should be H_2O valve to pressure off.

CYI H_2O valve to..

HOU Pressure off.

CYI Pressure off.
That's where you want it, right?

HOU Right.
Then you pump up the bulb. Better get that to him.

CYI Rog. Gemini 12, Canarys.

S/C Go ahead.

CYI Okay, in regard to your query, they want the H_2O valve to the pressure off position and then you pump up the bulb.

S/C Roger. I thought so, I just wanted to check.

CYI Roger.

HOU What did he say, Canary?

CYI He said that's what he thought, he just wanted to check.

HOU Okay.

CYI About a minute to LOS, standing by.

We've had Agena LOS. LOS Gemini. Both vehicles are go.

HOU Roger.

Gemini Control Houston, 86 hours, 49 minutes into the flight of Gemini 12. We have just passed out of range with Canary. The statement regarding the four remaining stacks which was passed up to the crew refers of course to the fuel cell. We have four good stacks aboard the Gemini 12 spacecraft at this time. These four stacks are holding good. Stack 1-C was turned off when the crew was awakened this morning. Awakened over the RKV, and the purges which -- fuel cell purges which have taken place have proven successful thus far. At 86 hours, 50 minutes into the flight of Gemini 12, this is Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 6:04 A. M. CST

Gemini Control Houston, 87 hours, 17 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft with Command Pilot Jim Lovell and Pilot Buzz Aldrin is approaching acquisition over Carnarvon now and the backside of its 55th revolution in this mission. Carnarvon will acquire the spacecraft shortly and we're standing by for conversation.

CRO	And telemetry solid.
CRO	Carnarvon has TM solid Gemini.
HOU	Roger.
CRO	All systems are go on Gemini.
HOU	Roger.
CRO	Gemini 12, Carnarvon.
S/C	Go ahead.
CRO	Okay, We know you're in the middle of T-2 and all that, but as soon as possible we'd like to get a 30-second purge on each section in the O_2, section 1 and then section 2.
HOU	After they finish T-2.
S/C	Is it required during the day pass, we'll be all night at this?
HOU	Negative, after they get out of...(interrupted)
CRO	All right, after you're through.
S/C	Okay.
CRO	Okay, we'd like to know how you're doing out of

water?

S/C Well, you can scrub the rehydratables. We can get a little water out of there but it goes down very slowly so you can't put any water in the bags so it's strictly dry food and drinking water.

CRO Okay.

CRO 12, for your information, your T-2 data looks real good.

S/C Right.

(PAUSE)

CRO Carnarvon has one minute to LOS, we'll be standing by.

S/C Roger.

CRO Carnarvon has LOS Agena.

HOU Roger.

CRO LOS Gemini. All systems go at LOS.

Gemini Control Houston, 87 hours, 23 minutes now into the flight of Gemini 12. We've just gone out of contact with the Gemini 12 spacecraft at Carnarvon tracking. The next station to acquire will be Grand Turk at 88 hours, two minutes into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 87 hours, 44 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is on its 55th revolution passing over the South Pacific at this time. And during this quiet pass over the South Pacific out of range of tracking stations to the north, we have a bit on our -- a bit of insight on our difficulty with the water gun aboard the Gemini 12 spacecraft. Our preliminary thoughts in the Mission Control Center are that Gemini 12 does have sufficient water aboard. An early insight here is that we are not receiving sufficient pressure from the system to push the water out of the gun. We had a comparable situation in Gemini 9 when the water gun played out shortly before reentry. In that instance, however, there was a mechanical problem with the gun itself. From the description given by Jim Lovell to the ground, we don't believe this is the case in Gemini 12, however. Our next station to acquire will be over the Eastern Test Range. And this will be at 88 hours, 2 minutes into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control, we're acquiring over the Eastern Test Range at this time.

SC Well he can't get water out of it, it just dribbles out very slow pressure, very small pressure at this low rate.

HOU Okay, I think there is more to the manual shutoff valve that is shown on the schematic on the GCH. We kind of feel down here that this shutoff valve ought to be off when you are pumping. This acts as a check valve which does not allow the 02 to bleed back out as it normally would in the on position. The on position is used in measuring blood pressure when you're letting the pressure out of the cup. So try it with the valve off.

SC Are you talking about the check valve in the blood pressure cup itself?

HOU That is right. We think it's a little sliding sleeve, is that correct?

SC A sliding sleeve, I thought I had her off, I'll check it again.

HOU Okay, look if that doesn't work, then pump it up and remove the bulb and I think that will let the check valve operate.

ANT AOS Antigua

HOU Did you copy that about removing the bulb?

SC Leave the computer off, burn each radial for 1 second then burn aft for 1 second to take out the delta V.

HOU Roger, the radials will give you a little forward, we want to take that out with the aft thruster.

Okay.

SC Roger.

HOU Okay, you can bring your A pumps on the line now. We're all agreed to it.

Were you able to get the 30-second 02 purge in between Carnarvon and the states?

SC Roger.

HOU Very good.

Gemini 12, confirm that you understand that you are suppose to burn aft with the forward thrusters on this D-10.

SC Roger, we're to take out the residuals at the lateral they give us.

HOU Very good. Would you give us another 30-second 02 purge? Section 2 then section 1.

SC Another 30-seconds 02 purge, section 2 then section 1.

Roger I have my right hand man here, he is doing the pumping right now, be with you in a second

SC Yes, okay, we'll pump it up and remove the bulb.

HOU You should be able to pump as hard as you can stand on that to build up the pressure. It s should check if you have that shutoff valve on. Correction off.

SC Right, the 02 water valve - the H20 valve is in the off position now and we're pumping up the bulb..

HOU Okay. I'd like to talk to you about your D-10 Mode George at 89:40. Did you copy the change that we had into your procedure on that?

SC Wait a minute let me check.

HOU Okay, we were talking to you at about LOS on the last stateside pass.

SC I have - have D-10 Mode G that is all I have at 89:40.

HOU Okay, in your procedures it calls for you to bring up the computer and use address 80. Rather then bring the computer up we'd like for you to leave it off and burn each radial thruster for 1 second. Then burn aft for 1 second to take out the resultant forward delta V. Understand?

HOU Okay. I'd like to make a change to your post retro jet checklist, if you can get it out.

SC Okay, just .....

HOU There is no rush on this, either now or anytime we get your next....

SC Section 2 purge.

HOU That is affirm.
Gemini 12, Houston. When you start to power up the platform at 88:40, if you can't maintain a 22 volts minimum on the main bus, we want you to go ahead and power down again.

SC Understand, 22 volts minimum on the main bus.

HOU Roger. We'll - later on we'll have you bring the main batteries on the line before you bring your computer up for reentry.

SC Okay.
Purge complete.

HOU Roger, complete.
Are we keeping you busy this morning?

SC Yes, you are doing pretty well.
Everytime I try to eat something, I'm either getting ready to purge fuel cells, taking updates, write down something ....

HOU What are you doing with your left hand? We want you to eat so if you are getting into a bind, just drop one of the S-5 or S-6 and go ahead and get a bite.

SC Yes, they are on borrowed time, we have just about over 150 of those magazines now.

HOU Roger, understand.

Gemini 12, we show your B pumps are on, you want to just go to just A pumps.

SC Understand, A pumps in primary and secondary.

HOU Roger, A pumps only.

SC Houston, 12.

HOU Go ahead 12.

SC Roger, we're following your updates now almost exclusively. If we miss anything in the flight plan it is because we don't have them both open out at the same time.

HOU Roger.

Roger, we've given you everything in the update Gemini 12. The only thing you might need the other flight plan for is for your acq time.

SC Roger.

HOU We got about a minute and a half to LOS. Have you got that post retro jet checklist out, we can get that?

SC Okay, go ahead.

HOU Roger. This is pre retro checklist opposite the page that says nominal 92 45 41, we have Agena power circuit breaker .....

END OF TAPE

HOU We have Agena power circuit breaker open. That's in about the middle of the page.

S/C .... retro jet now?

HOU Roger, this is in the - right after the page that gives you all the MDIU reentry quantities. You got that?

S/C Okay, that's preretro jet.

HOU Rog. Opposite where it says emergency RCS on.

S/C Okay, I copy. Go ahead.

HOU Agena power circuit breaker, it says open; we want it closed for the S-3. We have checked this out and that will be okay for landing.

S/C Understand leave the Agena power circuit breaker closed. That comes before G & Control circuit breakers. You want that..... Is that right? Uh, disregard.

HOU Just the Agena power, the Agena power circuit breaker closed.

S/C Roger, understand.

HOU You're at LOS.

Gemini Control Houston. We're standing by for Canary acquisition, in two minutes.

ANT LOS Antigua.

(PAUSE)

CYI Canaries have acq aid contact Agena.

HOU Roger.

CYI TM solid, go.

CYI Acq aid contact Gemini.

HOU Roger.

CYI TM solid Gemini, Gemini is go.

HOU Roger.

CYI Gemini 12, Canary Cap Com. We've nothing for you at this time. I'll be standing by, sending you a TX.

S/C Canary, 12. Roger, thank you.

S/C I'm sure glad. I just had a call to nature.

CYI Say again, 12.

S/C I said I'm glad you don't have anything for us. I just have a call to nature.

CYI Roger.

HOU Canary Cap Com, Houston Flight. I didn't quite copy that. What did he say?

CYI He said he has a call to nature right now.

HOU I copy that.

CYI Roger.

CYI He was glad we had nothing for him.

HOU Nothing yet.

(PAUSE)

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU We need another 30 second purge, 1 then 2, O_2 only.

CYI Roger. Section 1 then 2, right?

HOU Affirm.

CYI Gemini 12, Canary.

S/C Go.

CYI Okay, we need another O_2 purge only, section 1 then 2. 30 seconds each section.

S/C Roger, I copy.

HOU Canary Cap Com, Houston Flight. Send us another Gemini main, please.

CYI Roger.

CYI He's finished section 1 and he's on section 2.

HOU Roger. Send us a main when he completes, two will you?

CYI Roger.

S/C Purge complete.

CYI Roger, copy.

Gemini Control Houston, we're continuing to stand by during our pass over Canary. No conversation at this time.

CYI Did you get all our summaries, Flight?

HOU As far as I know, Canaries, yes.

CYI Okay, we're sending you three Gemini mains now

and we did notice one thing here, that after the purge, his main bus voltage dropped two tenths.

HOU Dropped two tenths after the purge?

CYI And also his load dropped about six tenths.

HOU Rog.

(PAUSE)

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU Send us an LOS main Gemini, Please.

CYI Roger.

CYI We've had LOS on the Agena.

CYI Gemini 12, one minute to LOS.

S/C Roger..... pressure check.

CYI Roger.

HOU Kano go remote, Canary go local.

KNO Kano's remote.

HOU Gemini 12, Houston Cap Com through Kano. Standing by.

S/C garbled

HOU Reading you garbled, Gemini 12. Standing by.

S/C Roger, we are through with the thruster check.

HOU Understand you are through the thruster check.

S/C That's correct.

HOU Roger.

END OF TAPE

Gemini Control Houston. We have just had loss of signal over Kano. Almost no contact with the crew during this pass. Conversation with the crew during this pass. We are on the 56th revolution of the mission of Gemini 12. Our next station to contact the Gemini 12 will be Carnarvon. This is scheduled at 88 hours, 50 minutes, 48 seconds into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 88 hours, 50 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is presently coming within range of Carnarvon, and we are standing by -- standing by now for any conversation between the Carnarvon Cap Com and spacecraft Gemini 12.

CRO Carnarvon has acq A contact, the Agena.

HOU Roger.

CRO Carnarvon has telemetry solid, Gemini.

HOU Roger. How is your main buss?

CRO Twenty-two volts on the meters. We're checking closer.

HOU How about load?

CRO We've got intermittent TM right now.

HOU Okay.

CRO How about 35 or 36?

HOU Did you check that 22, is that right?

CRO No, we haven't got valid data on the cam right now, Flight.

HOU Okay, let me know.

CRO 21.9.

36.1 amps total current.

HOU Say again.

CRO 36.1 amps total current.

HOU Roger.

CRO 11.1 on 2 and 25.0 on 1.

HOU Say again, 1.

CRO 25.0.

HOU Copied.

CRO Gemini 12, this is Carnarvon. Guess what we've got for you to do.

S/C Not another fuel cell purge?

CRO Make that 2 and then 1, O_2 purge.

S/C 30 seconds?

CRO That's affirmative.

S/C You want them now?

CRO As soon as possible, right.

S/C I'm right in the middle of a helmet T-2. Do you want us to hold the T-2?

HOU Stand by.

Carnarvon, from Flight.

CRO Go ahead.

HOU Forget the T-2.

CRO Roger. Skip that T-2.

S/C Skip the T-2, huh?

CRO That's affirmative.

S/C Okay.

30 seconds 2, then 1, coming up.

CRO Roger.

Okay, I'm going to send you a TX.

S/C I think we can get this T-2 anyway. We'll purge and by the time I get in position here we'll get it. By the way, we checked the thrusters.

Four and eight are dead completely. Two takes 12 seconds to build up to one degree and 7 takes 17 seconds I believe. All the rest of them check out.

CRO Okay. Thank you.

C-band track at Carnarvon.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Was that 7 seconds on number 2? Is that what you copied?

CRO Twelve. 12 seconds.

HOU Twelve, copied. How is your main buss voltage now Carnarvon?

CRO The same. We're keeping a close eye on it.

HOU Okay.

S/C Purge is complete.

CRO Roger.

No change on the voltage.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Is he doing any better on his water?

CRO Okay, I'll query him.

Have you made any progress on that water pumping process?

S/C Yeah, we're getting a little more water out now, I believe. I think it was the bladder. She must

CRO Okay.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Stand by. Carnarvon, from Flight.

CRO Go ahead.

HOU Okay, you might tell him if he can get anything else out of T-2, to go ahead. We don't think we have anything else for him.

CRO Okay.

HOU And standby a minute Carnarvon.

CRO Right.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Okay, also, or first Bill, tell, Jim, tell him that we are running 21.9. Is that what you still have?

CRO Affirmative.

HOU On the main buss..

CRO Make that 21.8.

HOU Okay, if it's started to sag at all, to power down.

CRO Okay.

HOU And we'll talk to him at the States.

CRO Okay. 12, Carnarvon.

S/C Go ahead.

CRO Okay. Number 1, your main buss volt is reading about 21.8. Keep a close eye on it, and if it

goes down any more, power down.

S/C Okay, we have fast heat on now for the platform. Watch it for us. We have all the lights/~~on~~ out right now. Let us know when you get LOS.

CRO Okay. And also, if you can get anything else on T-2, you can go ahead on that.

S/C We're doing that right now. That's why the lights are out.

CRO Okay.

One minute to LOS at Carnarvon.

Okay, 12, this is Carnarvon. We're about to loose you. There's been no change on your main buss voltage. 21.8.

S/C We'll hold it right there, then, till we get to the next acquisition.

CRO Okay.

HOU Hold it till he gets what?

CRO Till next acquisition. We've had LOS both vehicles.

Gemini Control Houston. We picked up the crew over Carnarvon while they were performing the T-2 experiment. This is the handheld sextant experiment with the helmet and gloves on. And the visor down. You will recall that this experiment is performed two ways;

both with helmet and gloves on and with helmet gloves off. The fuel cell purge by the way that was discussed here was a flight plan scheduled item unlike some of the fuel cell purges on our previous passes.

END OF TAPE

.....some of the fuel cell purges on our previous passes. Also Jim Lovell advised the Carnarvon Cap Com that their problem with the water gun was alleviated somewhat. Apparently it was a bladder that had slipped. Our next station to acquire will be Texas and this is at 89 hours 33 minutes, 26 seconds into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 8:20 A. M. CST

Gemini Control Houston at 89 hours, 33 minutes into the flight of Gemini 12. The Gemini 12 spacecraft is coming up on the final phases of its 56th revolution and at this time is approaching acquisition with the Texas station. We'll stand by for any conversation.

HOU Texas go remote.

TEX Texas remote.

HOU Gemini 12, Houston Cap Com, over.

S/C This is 12, go ahead Houston.

HOU Roger, Jim. We see the main bus voltage is down to 21.6. We'd like to have you take your platform off the line. We'll bring it back on at 91 hours.

S/C Okay, platform going off the line.

HOU We'd like to have you do the best you can on Mode G without a platform.

S/C Okay, we just had it aligned nicely too.

HOU Sorry about that.

HOU Gemini 12, Houston. When we bring the platform back up at 91 hours, if you have any trouble aligning with OAMS we'll activate the RCS and align on one ring.

S/C No, we're not having any problems. We can do with ..... Did you get my report I purged at Carnarvon?

HOU Roger.

S/C Okay, it seems like so many of them failed that they're counteracting each other or complementing each other, I should say.

HOU Understand your ability to align now is somewhat improved and you think you'll be able to do it on the OAMS. Is that correct?

S/C Yeh, so far we're able to align on the OAMS using the maneuver and the attitude control thrusters.

HOU Roger, well, it was our plan to give you a good try on the OAMS and go to the RCS if that didn't work.

S/C Roger.

HOU Gemini 12, Houston. Will you go back to both B pumps on - both A pumps off.

S/C Roger.

HOU Main bus voltage is up to 25. Looks good.

S/C Roger, we're back in both B pumps.

HOU Roger.

HOU Gemini 12, Houston Cap Com. Would you believe two 30 second O_2 purges, section 1 then section 2, prior to leaving the U. S. pass?

S/C You want two 30 second purges, right?

HOU Right, one purge on each section.

S/C Okay, fine, will do that. Want us to do that now?

HOU At your convenience.

S/C Okay. Houston, 12 here.

HOU Go 12.

S/C I'm sure glad this is a GP 7.

HOU You had us fooled. Ask Frank Borman if he'd like a good morning story.

S/C All right.

HOU Gemini 12, Houston. Confirm you stop the O_2 purge. Very good.

S/C Stand by one.

HOU We're standing by.

Gemini Control Houston, still standing by.

(PAUSE)

HOU Gemini 12, Houston Cap Com, over.

S/C Houston, 12 here.

HOU Roger, we'd like to get this D-10 Mode Golf over the ETR if you can go ahead and do your thruster firing before LOS, we'd appreciate it.

S/C Roger.

S/C Houston, 12 here. We're not in a FC.. position. Would you prefer to get the thruster firings in the present attitude before we leave ETR?

HOU That is affirmative. You have about three minutes. Go ahead and fire them in your present attitude.

S/C Roger.

(PAUSE)

HOU Looks good, 12.

S/C What's that?

HOU Looks good.

S/C Okay.

GTI LOS Turk.

HOU Gemini 12, Houston. One minute to LOS. Besides your preliminary reentry update at Carnarvon, we'll be giving you the rest of ... PLA's.

ANT LOS Antigua.

Gemini Control Houston, 89 hours, 48 minutes now into the flight of Gemini 12. The EECOM here in Mission Control is closely monitoring his displays. We turned the platform off during this last pass since we received a main bus voltage reading of 22 - or 21.6 rather. We want to keep around the 22 voltage level at least. We turned the platform off to kick that reading up a bit. It presently looks good. On that last reading we read 25.3 volts. At 91 hours, as was indicated to the crew, we plan to bring the platform

back up. Standing by for acquisition with Canary this is Gemini Control Houston.

HOU Canary from Flight.

CYI Go ahead.

HOU They put a TX in to turn the adapter off after your LOS.

END OF TAPE

CYI ...what was that?

HOU They put a TX in and turned the adapter off after your LOS.

CYI Then the TX is already in, right?

HOU Affirmative.

CYI Okay, fine.

CYI We have TM solid on the Agena.

HOU Roger.

CYI And TM solid on the Gemini.

HOU Roger.

CYI Both are go.

Gemini 12, Canary Cap Com standing by.

S/C Roger, Canarys.

Gemini Control Houston. We continue to monitor this pass over Canary.

CYI Okay, main buss is now showing 25.3.

HOU Roger.

CYI 19.6 amps.

HOU Roger.

Gemini Control Houston. Still no conversation with the crew during this pass. They are no doubt quite involved with the ion sensing attitude control experiment, the D-10 experiment. Still standing by however, this is Gemini Control.

CYI Gemini 12, Canarys.

S/C Go ahead, Canarys.

CYI Would you place your C-reentry radar to the continuous position please?

S/C Roger.
Would you give us the GET time acq please?

CYI Roger. I'll give you one at 89 hours, 58 minutes, and 45 seconds.

S/C Roger.

CYI 3, 2, 1, Mark, 89 hours, 58 minutes, 45 seconds.

S/C Thank you.

CYI And we're just about to LOS.

HOU Kano go remote, Canarys go local.

KNO Kano is remote and has acquisition.

HOU Gemini 12, Houston Cap Com through Kano, over.

S/C Go ahead.

HOU Roger, 12. If you're not getting enough water, you're having trouble getting the volume you'd like, you can take the hexnut on the back of the water gun and turn it one turn counterclockwise.

S/C Roger.

HOU That should give you about a five-fold increase in flow.

S/C Have you ever seen that cartoon with that guy holding his nose in the glass shower?

HOU Rog. You'll be another first in the space program. I got the rest of the PLA's. We'd like to get up to you here sometime if you have time to copy them now we can slip them in.

S/C Standby.

HOU Okay.

S/C Just a minute.

HOU Okay, this is the rest of block nine, 59 1 Bravo, 92:24:55, 20 + 29, 26 + 01, 60 - 1 Alpha. 94:00:50 20 + 10, 25 + 36, 61 - 4 Bravo. 96:49:37, 20 + 35, 26 + 18, 62 - 4 Bravo. 98:52:09, 20 + 27, 26 + 01, roll right, 85, correction, roll left, 85, roll right, 95, and weather good, for all areas. Over.

S/C Got them down, thank you.

HOU Roger. Correction to GETRC of 62 4 Bravo. Should read 98:25:09.

S/C Roger, 98:25:09.

HOU That is affirmative.

CYI ..LOS.

S/C Roger.

CYI 23 minutes to Carnarvon.

Gemini Control Houston, 90 hours, 5 minutes into the flight of Gemini 12. The earlier reference to Carnarvon or to correction -- to the water gun in the conversation between Bill Anders and the Gemini 12 crew, Cap Com Anders was referring to a seal on the back of the gun,removing the seal on the back of the gun. Where he jestingly suggested that it might increase the flow of water five-fold. ...

END OF TAPE

Gemini Control Houston 90 hours 25 minutes into the flight of Gemini 12 at this time. We are approaching acquisition with Carnarvon tracking station. And meanwhile in Mission Control Center, we are continuing to countdown our retro time at 94 hours 1 second for our planned landing area, 60-1. We have just acquired spacecraft 12 and we are standing by.

CRO Carnarvon has TM solid, Gemini.

Gemini 12, Carnarvon.

S/C Carnarvon, Gemini 12.

CRO Roger, we are here with you again. And if Buzz is ready for his finger exercise, we need a normal fuel cell purge, section 1 and then section 2.

S/C Roger, normal, fuel cell purge, section 1 and then 2. That is 2 minutes in O_2.

CRO That is affirmative. 12, this is Carnarvon. Will you go manual on your O_2 heater and bring it up to 700 onboard?

S/C 12, Roger.

HOU He has the circuit breaker open, Carnarvon.

CRO Say again.

HOU He has the circuit breaker open.

CRO The heater circuit breaker, is that right?

HOU[That is affirmative.

CRO Okay. No, we are showing it on up there.

HOU Okay, fine.

CRO Sorry about that. I thought I was flying...

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU Okay, you might, we casually mention, power up around 91 hours, we will have acquisition at 91:04. We will power him up over the States this pass.

CRO Okay. You want them to hold off on that power up until you have State side coverage.

HOU Yes, just tell them we will have them power up when we get acquisition at the States.

CRO Okay.

HOU Everything is looking good.

CRO Roger. 12, Carnarvon.

S/C Go ahead.

CRO Okay, it was mentioned to you about power up at 91 hours and we will have you power up over the States at 91:04 approximately.
12, Carnarvon, 1 minute until LOS. You O_2 pressure is coming up nicely. The fuel cells looking okay, we will see you next rev.

S/C Roger. Thank you.

CRO Carnarvon has LOS Agena.

HOU Roger.

Gemini Control Houston 90 hours 35 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft with Command Pilot Jim Lovell and Pilot Buzz Aldrin has just passed out of range of Carnarvon. The next station to acquire will be Canton. This acquisition time is 90 hours 47 minutes into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston. 90 hours 46 minutes 35 seconds now in to the flight of Gemini XII. The Gemini XII spacecraft is now approaching contact to the outer limits of the range of Canton tracking station. It is in its 57th revolution now into the mission and we are standing by for acquisition with Canton.

HOU Gemini XII Houston Cap Com through Canton is standing by.

CTN Roger.

Gemini Control Houston. We're still standing by during this pass. We've had no contact with the crew as yet.

Gemini Control Houston. As we continue to stand by during this pass, the Gemini XII spacecraft is in an apogee 156.8 nautical and a perigee 142.8 nautical. Standing by this is Gemini Control.

HOU Gemini 12 Houston Cap Com one minute to Canton LOS

CTN Roger, we'll give you your power up sequence over the states,Gemini 12.

S/C Understand, power up sequence over the states.

HOU That's affirmative.

Canton has LOS

Gemini Control Houston. 90 hours 53 minutes into the flight of Gemini XII. We've just gone out of range with the Canton tracking station. The next station to acquire will be Guaymas at 91 hours

4 minutes 17 seconds in to the mission of Gemini XII. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 91 hours, 4 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition with Guaymas tracking station. We are standing by for that pass over the states.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 12, Houston Cap Com through Guaymas over.

S/C Roger Houston.

HOU Okay Gemini 12, I have your power up sequence for you. First of all I would like to assure you we are not going to give you a purge on this pass.

S/C Hey, great.

HOU Okay, we would like to have you do - to test your main batteries.

S/C Main batteries testing. 32.8 up - no more.

HOU Copy.

S/C 33.9 on number 2

HOU 33.9.

S/C 33.9 on three. 34.0 on four

HOU Roger, copy 24.0. We will continue the rest of your power up when we start getting TM through Texas.

S/C Roger

HOU If it's convenient we would like to have you

try to get a readout on your reentry water tank bladder position or if you can't do that, give us an estimation of how much water you have drunk out of the reentry tank. We need this to calculate a good reentry weight for you.

S/C I tried to look at the reentry tank a little while ago Bill, I can't even seem to find it. Let me talk with Buzz and see how much water we drank.

HOU Roger. It figures as much.

HOU Texas go remote. Guaymas go local.

TEX Texas remote.

GYM Guaymas local.

S/C We used about 40 ounces of water.

HOU Roger, understand 40 ounces. That is total, is that correct.

S/C Roger

HOU Okay, Roger, we are ready to have you put Main battery number 1 and number 4 on the line.

S/C Roger. Number one and number four on the line.

S/C Houston the water gun reads 2308 right now so we can give you a reading later on so you can figure it out.

HOU Roger, gun readings are not valid with low pressure Gemini 12.

S/C Okay.

HOU Okay Gemini 12, we would like to have you bring both A pumps on the line, B pumps off.

S/C A pumps on, B's off.

HOU Okay, Gemini 12, you can bring your platform on line.

S/C Roger, platform is guage BEF.

HOU Roger, we will leave your computer off until we have had a change to take a look at your voltages. In any event it will be after fast East drop out.

S/C Roger, any time.

HOU If you are ready to copy, I have a water valving procedure that we would like to have you go through prior to retrofire and after your last drink.

S/C Roger, go ahead.

HOU Okay, this is after your last drink. Place your H_2O valve to normal. Condensate valve to "tank fill". Urine valve to "off". Gemini 12, do you want to check your IGS power supply. Very good.
Okay, to continue with the water valving, after landing if you want to get a drink, turn your condensate valve to normal and your H_2O valve to "pressure off". That's it.

S/C Got it.

HOU Mighty fine.

HOU Looks like your voltages are holding pretty good.

HOU Gemini 12, Houston. Be advised that our data shows that our deep end sensors are probably still working.

S/C Roger, they were working fairly well going into the last night pass SES and then we got busy and let it go. Looked like we were getting some oscillation from both of them occasionally.

HOU Roger.

HOU Gemini 12, Houston Cap Com - Over.

S/C Go ahead.

HOU Roger. We would like to have you turn your rate gyro's to Primary.

S/C Roger, gyro's go Prim. Say, do you happen to know what orbit it is we go to QSE.

HOU Well, it looks like you are in a 157 by 143.

S/C Thank you, just wanted to see which we will do.

HOU Give or take a little. Both are looking pretty good.

HOU Bermuda go remote.

END OF TAPE

FD Bermuda are you remote.

BDA Bermuda remote.

HOU Gemini 12, Houston Cap Com, one minute to LOS, 3 minutes to Canary.

SC 12, Roger.

HOU You are sounding pretty chipper today.

SC He wants to do one more EVA.

HOU I would like to get a few more D-10's there too.

SC Say again.

HOU Disregard.

SC Hey, what happened to the Agena?

HOU It's still out there.

SC I thought after that phasing maneuver we might go chase it.

HOU No we just stopped you and let you hold your own there.

FD Canary Islands from Flight.

CYI Go ahead.

FD Next to your last pass coming at you Bill.

CYI Roger.

FD Send us a number of mains and contigency alpha, we're trying to let the batteries warm up, want to watch the bus voltage before we bring the computer on.

CYI Okay, you want a main and an Ulta Gemini.

HOU Yes, a couple of them through your pass.

CYI Roger, okay. We'll give them to you about every 10 minutes.

And, this is Mission Control Houston. Apparently we have had loss of signal at Bermuda. We are coming across to the Canary Islands tracking station in a couple of minutes. At 91 hours 23 minutes 48 seconds after liftoff and 2 hours 36 minutes and 8 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Gemini 12 has just been acquired at the Canary Islands station. We'll stand by for any commentary between the spacecraft communicator, Bill Bastedo at Canarys and the crew of Gemini 12. Let's listen in.

CYI He does not have his scanners on.

HOU Say again?

CYI He does not have the horizon sensors on.

HOU Okay.

CYI Pulse mode.

HOU Okay.

CYI Gemini 12, Canarys standing by.

S/C Roger, Canarys. C-band and S-band keep dropping out of range.

CYI Say again, 12.

S/C C-band ... keep dropping out on the platform.

CYI Roger.

HOU We copy.

CYI Okay, we're not getting any C-band, Flight. Here it comes.

HOU Roger,

We need another Alpha and a main, please Canarys.

CYI Roger, coming at you.

We've got real ragged TM this time. We're trying to get good solid block before he sends you these summaries.

HOU Okay.

CYI Okay, he's got a secondary horizon scanner on now.

HOU Roger.

CYI Flight, Canarys.

HOU Go ahead.

CYI Okay, this TM we're getting is real ragged. We notice that there's a lot of C-band interference with the TM, so we'll try to get a good lock here before we send you these summaries.

HOU Okay, do the best you can.

CYI Gemini 12, Canarys. About a minute to LOS.

S/C Roger.

CYI LOS Agena.

HOU Roger.

Kano go remote. Canary go local.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano and standing by.

S/C Roger.

HOU Gemini 12, Houston. We'll be bringing your computer on the line after we've had a chance to take a look at you over Carnarvon.

S/C Roger.

HOU Roger.

HOU Gemini 12, Houston Cap Com. One minute to Kano LOS.

S/C Roger, Houston.

HOU Five minutes to Tananarive.

S/C And as I understand it, Carnarvon will give us our reentry update, right?

HOU Roger, we'll give you the preliminary update at Carnarvon. Give the MDIU quantities over the States.

S/C Okay.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 10:27 A. M. CST

KNO Kano LOS.

Gemini Control Houston. We have had loss of signal from the Kano, Nigeria, voice remoting station. Spacecraft Gemini 12 will be coming up over the Tananarive voice remoting station in approximately four minutes. At 91 hours, 41 minutes and 24 seconds after liftoff and two hours, 18 minutes, 32 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control, we're 91 hours 45 minutes and 35 seconds after liftoff. Coming up over the Tananarive voice remoting station. They have had contact there. We'll stand by for spacecraft communicator here in Mission Control to converse with the crew. The spacecraft just went in to darkness. Let's listen in.

HOU Gemini 12 Houston Cap Com through Tananarive and standing by.

This is Mission Control. We're still standing by over Tananarive for any further conversation. It is unlikely that there will be any, but we'll leave the light open in case either Pete Conrad makes another call to the spacecraft from Tananarive.

HOU Gemini XII Houston Cap Com through Tananarive and standing by.

TAN Roger Houston

CRO Flight Carnarvon

HOU Go ahead.

CRO Roger, Just two questions. One is retrofire update our remarks say Bluebird day

HOU Say again.

CRO Under item #6 under remarks it says Bluebird Day, I'm wondering about that.

HOU Recovery says that means it's a beautiful spring day.

CRO Hmm. Not any SOP

HOU That's okay, we'll add it.

CRO Okay. One more question

HOU Gemini 12 Houston Cap Com one minute to Tananarive LOS

TAN Roger.

HOU Eight minutes to Carnarvon

CRO That other question on on the accelerometer bias check, how many minutes you want to run this thing?

HOU Stand by I think it's three. Three minutes.

CRO Okay, thank you.

HOU On that message you have I would like to change the order of 2, 3 and 4; items 2, 3 and 4 under weather to 4, 2 and 3. And read them up in that order that's the way they are ready to copy it. Got it?

CRO Yeah, did they change their form up there?

HOU That's what cap com tells me.

And this is Mission Control Houston. We have had loss of signal through the Tananarive voice remoting station. Carnarvon will acquire in one minute, 92 hours one minute which is approximately eight minutes from now. Meanwhile we have a report of photographic effort made during the Gemini XII mission to this point in time , estimate made on the ground of course. Color photographs made with a 70 mm Hasselblad, they're estimated 350 exposures made at this time. With the Maurrer, 1 magazine of 50 exposures in color, 80 exposures

in ultraviolet. Two magazines in high speed black and white, for a total of 80 exposures. With a sixteen millimeter motion picture camera they have used an estimated 20 magazines for, 50 feet each, for a total of one thousand feet of movie film. This was all shot at 6 frames per second. Some further numbers now for the retrofire and landing in area 60 dash 1. The current time for retrofire is ground elapsed time of 93 hours 59 minutes and 58 seconds. The time of 400,000 feet will be 20 minutes 14 seconds after retrofire. The target area is now positioned at latitude 24 degrees 35 minutes north by 70 degrees west longitude. These numbers may change a few seconds one way or the other as we get additional tracking over Carnarvon and over the next stateside pass, but the numbers shouldn't significantly change except plus or minus two or three seconds. At 91 hours 55 minutes and 52 seconds after liftoff and 2 hours 4 minutes and 3 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston 92 hours 1 minute and 4 seconds after lift-off. We have established contact with Gemini 12 from the Carnarvon, Australia tracking stations. All systems are go on the ground. He is putting in a call. Let's listen.

CRO Gemini 12, Carnarvon.

S/C Go ahead.

CRO Okay, we are giving a check on your voltage here and we will be letting you know about the computer in just a minute.

S/C Okay.

CRO Showing 23.7 on the cam.

HOU Good. Okay, we are ready for the computer and accelerometer bias.

CRO Okay, 12, this is Carnarvon. You can turn your computer on. Prelaunch, we would like to do an accelerometer bias check.

S/C Computer is on prelaunch.

CRO Roger.

HOU How does the bus look after the computer, Carnarvon?

CRO I am showing 23 something. We will get you a readout in a minute.

HOU Okay.

CRO 23.2.

HOU Good.

CRO Okay, I have a short preretro for you whenever you are ready to copy.

S/C Roger, stand by a second. Go ahead.

CRO Okay, this is for area 16-1 Alpha. Your nominal IVI aft 302 down 113. Your initial deflections will be updated over the States. Pitch gimbal at 400K 92. You will have a lighted horizon at retrofire and also at 400K. RET begins blackout 22 plus 29. RET end blackout 27 plus 30. RET drogue at 29 plus 16. RET main 30 plus 50. MDIU quantities also over the States and now for the weather. Cloud cover, 2000 scattered, high broken. Visibility 10 nautical miles. Wave height - 3 feet with 4 to 5 foot swells. Wind 360 at 15. Altimeter setting - 29.94. Recovery call signs Air Boss 1, 2 and 3. The carrier is the WASP. And under remarks you might add it is a blue bird day.

S/C Roger, Carnarvon. Could you tell me just where the carrier will be with respect to the target point so I, you know, so I can get a little English on it.

CRO You don't want to hit it. Okay, stand by.

CRO Can you get that for me Flight?

HOU Stand by. We are checking on it.

CRO They are checking on that, 12. You will probably see the carrier before we have an answer for you.

S/C Right, I was just..

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU With respect to where the carrier will be, it will be 4000 yards downstream of the target point.

CRO Okay.

4000 yards downstream of the target point, 12.

S/C Sounds good.

Did you have a preliminary GETRC report?

HOU Preliminary preliminary

CRO Stand by. Go ahead. I am listening.

HOU Preliminary at this time is 93 hours 59 minutes 58 seconds.

CRO Okay. Preliminary GETRC for 60-1 Alpha 93 59 58.

S/C 93 plus 59 plus 58.

CRO Roger that.

HOU And we need a Gemini Charley, please.

CRO We will try and get one out there. Telemetry is

CRO pretty bad right now.

HOU Okay.

CRO 12, Carnarvon. We have about 1 minute until LOS. We will be standing by.

S/C Roger.

HOU And have them do a 30 second O_2 purge. Each section.

CRO A 30 second O_2 purge. On each section. Let me check which one first. Which one first.

HOU Doesn't matter.

CRO Your choice.

S/C Good. Do you have any readouts down there on how well we are aligned?

CRO Your telemetry is coming in pretty bad. How about that. You look pretty good now. Good solid telemetry. Okay, you look good and solid, BEF.

HOU Okay. Did you tell them that, Carnarvon?

CRO That is affirmative.

HOU Okay.

CRO We have had LOS. All systems were go at LOS. And this is Mission Control Houston. We have had loss of signal at Carnarvon. At 92 hours 10 minutes 12 seconds after lift-off and 1 hour 49 minutes 43 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 92 hours 20 minutes and 11 seconds after liftoff. Coming up now over the Canton Island station. This will be an 8-1/2 minutes pass over the Canton Island voice remoting station. We'll just skim by the lower edge of the Hawaii tracking station. Likely there will not be any contact made during the Hawaii pass. This will be the next to the last stateside pass coming up. Bill Anders putting in a call, let's listen.

HOU Gemini 12, Houston Cap Com through Canton, over.

SC Roger Houston.

HOU Roger, 12. We'd like to confirm that most of your exposed film is in the center line camera box. Over.

SC That is right. Most of the film is in the center line camera box. .....

HOU Roger, 12. Be advised you're fading in and out. We'll be counting you down over this site. Next pass about 3 minutes to the pass.

SC Roger.

HOU How are we reading you?
How are you reading us?

SC We are reading you four by four.

HOU Roger, same. By the way, 12, Muhammad Ali sends his regards.

SC Thank you very much.

HOU He is the greatest.

SC He sure was great last night.

HOU Yea.

Gemini 12, Houston Cap Com, through Canton how do you read?

SC Loud and clear.

HOU Mighty fine.

And, we've had loss of signal from the Canton Island voice remoting station. We are at 92 hours 27 minutes and 41 seconds after liftoff and 1 hour and 32 minutes 14 seconds before retrofire. Spacecraft Gemini 12 will be coming up over the next to the last stateside pass in approximately 10 minutes. We'll come up again with that pass. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 92 hours, 38 minutes after liftoff. Standing by for this next to the last Stateside pass. There goes the call from Bill Anders , let's listen in.

HOU Gemini 12, Houston Cap Com - over.

HOU Gemini 12, Houston Cap Com - over.

HOU Guaymas go remote, California local.

GYM Guaymas local.

CAL California local.

HOU Gemini 12, Houston Cap Com - over.

S/C Gemini 12 - go.

HOU Roger, I have your retro update if you are ready to copy.

S/C Roger, go ahead.

HOU Roger, your GETRC remains the same 935958, RET 400 K, 20 + 14, RET RB 26 + 02, Bank left 50, bank right 60. Down range deflection 0 degrees plus 230 55 degrees plus 64, 90 degrees minus 80. Read back.

S/C Roger, understand 50 - 1 GETRC 935958, RET 400 K 20 + 14, RET RB 26 + 02,bank left 50 degrees, bank right 60 degrees, ... RBI's aft 302, aft 113 down, deflection 0 degrees 230 55 degrees plus 64, 90 degrees minus 80.

HOU Roger, that's correct Gemini 12.

S/C Houston, 12, did you copy.

HOU Roger, we copy, that is correct.

S/C And the pitch at 400 K is 92 degrees, right.

HOU That is affirmative.

HOU Texas local, Guaymas remote.

HOU Gemini 12, Houston, will you put on Main batteries 2 and 3 on the line.

S/C Two and three on the line. ...batteries on one.

HOU That is affirmative.

HOU Gemini 12, Houston Cap Com, will you put section two to warm-up. We gonna start turning it off so you won't have to worry about it.

S/C Roger, Section 2 warm-up.

HOU Gemini 12, Houston Cap Com will you put your computer in pre-launch for your retro load.

S/C Roger, computer is in pre-launch.

HOU Roger

HOU Roger, here comes your retro load - mark

S/C Roger, we got it.

HOU Roger,it looks good on the ground. And Gemini 12 are you ready for your MDIU quantities.

S/C Roger, ready to copy.

HOU Roger, Address 63 22 correction Address 63 23 324, Address 04 68 694, Address 65 correction Address 05 06 812, Address 66 69 224, Address 67 27 427, Address 08 40 088, Address 09 07 366, Address 10 02 444, Address 11 29 000.

S/C Roger, I update the MDIU quantities.

HOU Roger, and it looks good on the ground.

HOU Gemini 12, could you put your quantity read switch to H_2.

HOU Gemini 12, standby for transmitting TR.

S/C Go ahead.

HOU One - mark.

S/C Roger, received it.

HOU Roger.

HOU Gemini 12, your TR looks good on the ground.

S/C Roger.

HOU Gemini 12, will you put your Section 2 power switch OFF.

S/C Power switch two OFF. - The Delta P light went out.

HOU Roger, we would like to give you a check on your TR, Gemini 12.

S/C Go ahead.

HOU Will give you a mark at 71:30:06.

S/C You are fading out.

HOU Roger, we would like to check your TR, we will give you a mark at 71:20.

S/C Understand 71:20

HOU Roger, 5 seconds, 2, 1 - mark - 71:20.

S/C Roger, 71:19.

HOU That's good.

END OF TAPE

HOU	Gemini 12, Houston Cap Com. RCS ring A rate pressure shows slightly high, will you pulse it a few times?
S/C	Will you say again, Flight?
HOU	RCS ring A rate pressure shows slightly high, will you fire RCS ring A a couple of times?
S/C	Roger, ring A.
HOU	Gemini 12, Houston Cap Com. We'd like for you to hold off firing ring A for a little awhile. We'd like to watch it.
ANT	AOS Antigua.
S/C	Roger, A ring off.
S/C	Houston,..... fire B.
HOU	Roger, B looks good.
HOU	Gemini 12, Houston Cap Com. Don't be too surprised if the com through Canton is not too hot the next pass.
S/C	Understand. We'd like for you to give us a 22 - .... 22 time hack.
HOU	Willco.
HOU	Bermuda go remote.
BDA	Bermuda remote.

(PAUSE)

HOU Gemini 12, Houston Cap Com. One minute to LOS. We'd like you to not use ring A till we advise you over Canaries in five minutes.

S/C Roger.

HOU Canaries from Flight.

CYI Go ahead, Flight.

HOU I want you...(interrupted)

And this is Mission Control Houston. Apparently we have had loss of signal over the Eastern Test Range, the Antigua station. Be coming up next over the Canary Islands Station for the last pass for this mission. As a matter of fact, for the last pass for the Gemini program. We're about three minutes from Canary. We'll be back up at that time for that pass continued through the Kano, Nigeria voice remoting station pass. At 92 hours, 58 minutes, 43 seconds after liftoff and retrofire minus one hour, one minute and ten seconds, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Gemini 12 is coming up over the Canary Island tracking station. This will be a fairly low elevation angle pass. 2.47 degrees above the horizon. For a duration of 4 minutes and 20 seconds. We are standing by for Canary Cap Com to put in a call to the crew. The Canary pass will blend into the Kano, Nigeria voice remoting station pass. Let's listen in.

CYI Gemini 12 Canary Cap Com.

S/C Go ahead Canary.

CYI Okay, your radiator rate pressure is up a little bit. You want to use it a little bit to see if we can bring this rate pressure down?

S/C Okay....

CYI Say again.

S/C Okay, I understand. ...

HOU Let me know when he starts using it and what it comes down to.

CYI Roger.

HOU How is it coming Canary?
Is he using it?

S/C How does it look Canary?

CYI Say again 12.

S/C How does it look?

CYI ...reads 413 right now.

HOU Use it. Use it. Have him use it.

CYI Go ahead and use some more.

HOU Out of ring A.

CYI Out of ring A now.

S/C I am using ring A only.

HOU And is it coming down, Canary?

CYI It is coming out right now.

HOU Say again.

CYI 379. This time.

HOU Okay.

CYI Want them to use a little bit more?

HOU Yes, use a little more.

CYI Okay 12, it is down to 379, use a little bit more.

HOU And what is the source pressure?

CYI Stand by.

2.35.

HOU Okay.

And what is it now please?

CYI We are getting some bad data right now. Stand by.

HOU Okay.

CYI Do you want us to find out what he is reading onboard?

HOU He can't read reg.

CYI You are right.

HOU And we want to stay on ring A and advise him to use ring A for the rest of the activity Canary, just to keep this situation relieved.

CYI Gemini 12, Canary.

S/C Go ahead.

CYI Okay, we would like for you to stay on ring A for the rest of your activities here. So we can keep this pressure down. It is 310 down here now.

HOU Okay. Okay, normal operation in ring A.

CYI Say again.

HOU Okay.

CYI Complete the last in ring A. Roger. Got about a minute until LOS. And have a good trip home.

S/C Thank you.

HOU Canary Com Flight.

CYI Roger, Flight.

HOU Keep a close eye on that and let me know if you think the regulator is working there. You probably don't have much time.

CYI Now we have some real bad data too.

HOU Say again.

CYI Well, we have some real spotty data here.

HOU Okay, what was the lowest reg you got?

CYI 310.

HOU Lowest reg was 310?

CYI Roger.

HOU Okay, Bill, thank you. What was his final source?

CYI Stand by one, we will camp it out. 2.33 final source. I will give you a final reg here in just a minute.

HOU Say again source.

CYI 2.33

HOU 2.33 thank you. And he copied to go to normal operation on ring A. To keep it relieved. Did he not?

CYI Roger. 306 three zero six.

HOU That was your last reading?

CYI Roger. We have had LOS.

We have had loss of signal at Canary. We will stand by for the Kano pass, for further conversation.

HOU Canary Com Flight.

CYI Go ahead Flight.

HOU Did it look like he was firing a lot, or did it look like he was settling out more. Oh, you don't have thrusters, okay.

CYI We don't have the thrusters.

HOU Yes, okay.

HOU Kano go remote.

KNO Kano remote with acquisition.

HOU Gemini 12, Houston Cap Com through Kano. Over.

S/C Okay, Houston.

HOU Roger, with respect to RCS ring A, we would like for you to do the rest of your normal maneuvers on ring A rather than B or OAMS.

S/C Roger, we now have ring A only, we are aligning the platform with ring A....

HOU That is affirmative. And we would like to have you use both rings for retrofire, use ring A first for entry.

S/C Roger, both rings for retro and ring a for reentry.

HOU And what do you have for an RCS onboard readout?

S/C Ring A reads 2250... and 58 - 57 degrees, ring B reads 2450 psi and 67 degrees.

HOU Roger, copy. Gemini 12, Houston Cap Com, 1 minute to Kano LOS. Could you give us an RCS source pressure.

S/C Roger....

HOU Copy 2250.

KNO Kano has LOS.

This is Mission Control Houston. We have had loss of signal at the Kano, Nigeria voice remoting station. To summarize briefly what has been going on during the Canary and Kano pass, apparently the source pressure in ring A of the reentry control system of Gemini 12 was slightly overpressurized. And to relieve this over pressurized condition, the crew was instructed to use Ring A during the platform alignment and other activities prior to retorfire. So that some fuel would be used thereby, relieving the overpressurization condition. At 93 hours 15 minutes 24 seconds after lift-off and 44 minutes 32 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. We have had acquisition at Tananarive voice remoting station. Pete Conrad is calling the crew now. Let's listen in.

CONRAD — Gemini 12 Houston at Tananarive Could we have an RCS ring A source please.

S/C — 2150 is the RCS ring A

HOU — Roger 2 1 5 0 thank you. Standing by.

Gemini 12 Houston, the data is good, the load is valid we will not change it and we'd like to get one more ring A source pressure from you please. We're about 1 and 1/2 LOS.

S/C — Roger, ring A now 2125.

HOU — Roger 2125, we'll see you during the count, over Canton.

Tananarive LOS

And we have had loss of signal at the Tananarive voice remoting station. Meanwhile in the prime recovery area in the west Atlantic, one of the air force air rescue service HC130H "Herky-Bird" aircraft has been diverted to investigate a life raft seen floating some 90 miles south east of Grand Turk Island. Other aircraft from Kinley Air Force Base in Bermuda have been deployed to take up the slack in the situation with the rescue aircraft. At 93 hours 29 minutes 38 seconds after liftoff and 30 minutes and 17 seconds before retrofire this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Coming up over Carnarvon for the last pass of this mission and the last Gemini spacecraft to pass over the Carnarvon station. This will be a relatively high elevation angle pass, 57 degrees for a duration of 8 minutes and 42 seconds. They have had initial contact with the spacecraft. Let's listen in now.

CRO 12, Carnarvon.

S/C This is 12, go.

CRO Okay, we have about a minute and 20 seconds for your TR 22 minute time hack.

S/C Roger, standing by.

Carnarvon, Gemini 12. Preretro checklist is complete.

CRO Roger.

HOU What is his source pressure please?

CRO 2150.

HOU 2150. Thank you.

What is his reg A now, Cap Com?

CRO 30 seconds. 387.

HOU 387 okay.

Give him your mark and then let him know it is still a little bit high and we want him to use it.

CRO Roger.

CRO 10 seconds. 5 - 4 - 3 - 2 - 1. Mark 22 minutes.

S/C Roger, we read 2159.

CRO Say again.

S/C Roger, read 2159 out of the computer.

CRO Roger. Okay, you are a little high on your reg pressure. How about using that ring A a little bit.

S/C ...fire it.

CRO 391...

S/C ..entry.

HOU 390 are you reading?

CRO That is affirmative.

HOU Is he using it?

CRO Affirmative.

HOU Let me know when it is coming down.

CRO Holding at 391 Flight.

HOU 391?

CRO That is affirmative.

..391.

HOU Okay, have him fire it, bring it down. I would like to get it down to about 350 where you are.

CRO Okay.

CRO 12, Carnarvon.

S/C Go ahead.

CRO Okay, we are still a little high on that hydrogen pressure. You guys can do a better job than that.

S/C ...

HOU Tell them what you are at, Jim.

CRO Okay, we are showing about 392 here on the ground. We want to get it down to about 350. No change, Flight. 2110 on source pressure.

HOU Roger. Ring B look good?

CRO That is affirmative.

S/C ...

CRO Let me give a quick look-see.

HOU Say again.

CRO I was talking to the crew. Hey, bully for you guys, you have got it down 1 psi. Use a little more. Down to 387. Use a little more.

HOU And send us a Gemini main, please?

CRO Roger. Still 2110 on source.

HOU Okay.

S/C How does it look.

CRO Let me check. Okay, you can stop now. Relax.

HOU What have you got, Jim?

CRO 325.

HOU Okay, tell them that ought to be great for retrofire.

CRO Okay, 12, this is Carnarvon, we are down to about 325 and that is good for retrofire.

HOU And what is the source?

And what is your source pressure, Carnarvon?

CRO Checking on it now.

HOU Okay.

CRO Same, 2110.

HOU Okay. Jim, tell them we are very happy with that.

CRO Okay. Giving it one more check, here. And it is 325.

HOU Okay.

CRO 12, Carnarvon.

HOU In the blind, Jim.

CRO Gemini 12, Carnarvon, your rate pressure looks real good at 325, and steady.

S/C Roger.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU And how is source and reg on B?

CRO Stand by.

We will get you a couple of cams on that.

CRO 2580 on source pressure.

HOU Okay.

CRO 12, Carnarvon, 1 minute until LOS and it has been a pleasure working with you guys, see you back in Houston.

S/C Roger, thank you. Thank you very much Carnarvon.

CRO Bye.

296 on reg pressure.

HOU Okay, 296.

LOS main, LOS OVC.

CRO Roger. They are already on their way, Flight.

HOU Okay.

CRO We have had LOS Gemini. All systems as stated.

HOU Okay, good job.

And this is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. Meanwhile, the situation reported earlier where a life raft had been sighted near Grand Turk Island, the Coast Guard has taken over the operation and it appears that a civilian aircraft is down in the water at that location. The air rescue service aircraft out of KindleyAirforce Base in Bermuda have gone back on station to support Gemini 12. At 93 hours 46 minutes and 5 seconds after lift-off, 13 minutes 48 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Spacecraft Communicator, Pete Conrad, has begun conversation to Gemini 12 through the Canton Island station. They are up to three minutes before retrofire. MARK - three minutes to retrofire. Let's join the conversation.

HOU MARK three minutes and counting.

SC Checklist is complete.

HOU Houston, roger.

The crew of Gemini 12 will have a balmy 77 degree temperature in the prime landing area. In addition to the prime recovery vessel the USS Wasp in the prime recovery area, there is the Destroyer Lloyd Thomas; four SH3A helicopters off the Wasp; two P3A's out of Jacksonville, these are aircraft with Air Boss aboard, Air Boss 1 and Air Boss 2; two HC-130H Herky Bird Aircraft at both ends of the landing footprint; two JC 130 Aircraft, these are tracking aircraft from the Eastern Test Range and two JC 130 Aircraft who act as communications relay aircraft. We are now one minute and 18 seconds to retrofire. MARK - one minute. We've had separation of the adapter section. Thirty seconds - MARK. 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, RETROFIRE. We have confirmation all four retrofire rockets have fired. Let's join the conversation.

HOU Houston copy.

SC Retro Jett

HOU Roger, retro jett. We didn't copy the left - right IVI's. Did you have any?

SC Left four.

HOU Roger, left four.

SC (garbled)

HOU This is Houston, say again.

SC Roger, 301.4

HOU Roger, 301.4.

SC .....down

HOU Roger, copy.

FD Canton go local.

HOU Standing by for you Hawaii. Send us some mains and some OBC's.

HAW We got C-band on the vehicle we got no TM.

HOU Roger.

HAW Gemini 12, Hawaii

SC Go ahead Hawaii.

HAW Roger, would you confirm that you are on real-time and acq aid with TM.

SC (garbled)

HAW Roger, go to real-time and acq aid please.

SC Roger, real-time and acq aid.

HAW Roger, we got it. Thank you.

HOU How does RCS ring A look to you Hawaii?

HAW 298 at the present

HOU Roger, 298.

HOU Hawaii, do you want to give him an RET time acq.

SC Postretro jett checklist is complete.

HAW Roger, on your relay, MARK at + 5 minutes in about 30 seconds if you want it.

SC Roger, we MARK.

HAW 10 seconds

3, 2, 1, MARK.

SC Roger.

HAW Okay, and your source pressure in ring A is looking good, reg pressure good.

SC Thank you.

HOU Hawaii from Flight.

HAW Go ahead Flight.

HOU Just for the record, does it look like ring A reg is operating in the band of the regulator?

HAW It is in there right now, Flight

HOU Okay.

HAW To bad we lost those thrusters.

You know that indication of the RCS ones.

END OF TAPE

... They are looking real good from here.

HOU Roger

HOU Hawaii will you send us a couple more OBC's.

HAW Roger, Wilco.

HOU And a couple more Mains.

HAW Roger

HOU Hawii from Flight.

HAW Hawaii - one minute to LOS - Go Flight.

HOU Based on IVI's initial deflections, 61 nautical miles up. Pass that on please.

HAW Okay, initial deflection based on the IVI should be 61 nautical miles up.

S/C Roger, 61 up.

HAW Roger.

And this is Mission Control Houston. We have had loss of signal at Hawaii. Should be coming across the California station in about a minute and a half. Hawaii Cap Com reports there is no problem at all during this final pass over the Hawaii station. We will continue to monitor air-to tround for contact when it is established through the California on this final Stateside pass. The target point for Gemini 12 stands at 24 degrees, 35 minutes North latitude by 70 degrees West longitude. This is some 600 miles East of Cape Kennedy. All recovery forces are deployed on station. Standing by for contact at California.

Gemini 12 at the present time is at approximately 117 nautical miles in its reentry path. We are at retrofire plus 12 minutes, 26 seconds. Conrad is calling through California, let's join the conversation.

S/C 12 here.

HOU Roger, we are standing by, I'll pass you the data as soon as I can get it.

S/C Roger.

Gemini 12 at this time should be at 109 nautical miles altitude. We are at 13 minutes, 45 seconds after retrofire. 20 minutes and 33 seconds before splash.

HOU Guaymas go remote. California go local.

GYM Guaymas local ... guaymas remote.

CAL California local.

Gemini 12 at the present time should be at about 95.88 nautical miles in altitude, crossing the 120 degrees West longitude Meridian .....

END OF TAPE

This is Mission Control again. We're down now to 88.6 nautical miles altitude as Gemini 12 crosses the coastline of Baha, California. Gemini 12 will cross just to the north of the Guaymas, Mexico, station. We're about three minutes now from 400,000 foot mark. Let's continue to monitor air-ground for any conversation.

HOU — Guaymas go local, Texas go remote.

TEX — Texas remote.

GYM — Guaymas local.

HOU — Gemini 12, Houston. Your 400 K time 20 + 08.

S/C — 20 + 08, thank you.

This is Mission Control. Gemini 12 should be down to approximately 400,000 feet. The ground track is passing just south of San Antonio. Let's join the conversation.

HOU — RETRB 26 + 03.

S/C — RETRB 26 + 03, bank left 46, bank right 56.

HOU — 12, Houston. We passed you 20 + 08 for 400 K time and we thought you said 28 back. 20 + 08.

S/C — 20 + 08 for 400 K, thank you.

HOU — Roger.

HOU — 12, Houston. Your drogue time, 29 + 02. Your main, 30 + 26.

S/C — Roger, understand. 29 + 02 drogue, main 30 + 26.

HOU — 12, Houston. Begin blackout and end blackout times are good.

S/C Roger.

HOU Have a good ride.

This is Mission Control. Gemini 12 should be entering the blackout period at this time, is at 52.21 nautical miles altitude just south of the Mississippi Delta. We're now 11 minutes, 27 seconds till splash. Retrofire plus 23 minutes.

Still in the blackout.

10 minutes, 20 seconds till splash. Still in the blackout. Gemini 12 is just crossing the Florida peninsula at the present time. Should be down to about 40 nautical miles in altitude as it crosses the southern portion of the Florida peninsula.

END OF TAPE

This is Mission Control Houston. We're coming up on the end of blackout. We're still 7 minutes and 26 seconds till splash. At 27 minutes after retrofire. We've had radar contact off the Wasp confirmed. Mark. End of blackout. They've had acquisition at Grand Turk Island.

HOU Gemini 12, Gemini 12 Houston standing by.

Gemini 12, Gemini 12 Houston standing by.

S/C Roger, automatic reentry.

HOU Houston Roger.

12 Houston, our data says you're right in the money.

S/C Roger. Address 86 reads 2441

HOU Roger

S/C (garbled)

HOU Copy

S/C (garbled)

HOU Roger

S/C ..... reads 2436

HOU Roger 2436

12 Houston, we've got you on the "Boob tube" you look good.

Visual contact

HOU Gemini 12, we have you on the tube.

12 Houston, smile you're on the tube

And this is Mission Control, Gemini XII has gone to 2 point suspension it's off the starboard beam of the prime recovery vessel Wasp.

The rendezvous and recovery can of Gemini XII spacecraft is drifting alongside Gemini XII as they near the water. The Wasp reports that both the spacecraft and the R & R can are in visual sighting of the carrier. The carrier Wasp reports that the helicopters are right with the spacecraft, we're 35 seconds to splash. 20 seconds to splash. Mark. Should be splash. We've had splash down confirmed. Rough estimates from the Wasp indicate that the splashdown occurred some 2 and 1/2 to 3 miles abeam of the Wasp, however, this will likely be refined and the numbers will change several times before we come up with a final number.

END OF TAPE

This is Mission Control again. One comment from Mission Director Bill Schneider here in Mission Control was as he saw the splash-down occur "Well, I am out of a job." We are now at some 36 minutes 45 seconds after retrofire. The last estimates of distance of Gemini 12 from the WASP were something like 4 miles. We are standing by here in Mission Control for any air-to-ground contact between the crew, I should say water-to-ground contact.

..pick up Air Boss live on air ground.

Okay is that on...

And it looks like he is talking to the astronauts.

I can't tell at the present time. ....spacecraft is rolling quite a bit. Airborne ... plugged in and the... around the spacecraft at this time. ... and we have a signal from the swimmers that the astronauts are okay. A signal from the swimmers that the astronauts are okay. He has plugged in the spacecraft and is in communication with them, they are okay at this time. The collar is about 3/4ths of the way around the spacecraft and it appears that it is being attached right now. Search 3 is hovering downwind, watching the proceedings on photo 1. The parachute is still on the surface, the air bubbles are keeping it up... package is not in sight at this time. The collar is completely around the spacecraft now, all the antennas are erected and no communications have been

established...radio, with the astronauts in the last few minutes. However, the swimmers have ...spacecraft and they are okay. I can see the astronauts's helmets. The glass through the port, but you cannot make them out at this time. The collar is still around, as not yet inflated, however. ...upwind about 50 feet away, one swimmer is going over to retrieve the raft now. Wind is about 15 to 20 knots .... due north.. 1 mile south of the spacecraft at this time, making an approach. A very close recovery. Spacecraft was watched all the way down until it hit the water and was a beautiful recovery. At this point it looks like the collar is about to be inflated.

PHOTO 1 This is Photo 1 reporting that Gemini 12, switch 2 and now switch 3 are on station and the swimmers operating from that point...pulling the raft back over to the spacecraft and it looks like the collar is firmly attached now. The spacecraft is floating normally and we have a ... that the astronauts are okay. This is Photo 1, Air Boss 1 62 and 63 are now...and Search 1 arriving in just a few

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PHOTO 1 minutes. There are now 4 helicopters at the scene. No troubles at this time. The... of the spacecraft...slowed down somewhat because the collar is attached and is floating very steadily. They made ...I don't believe we will cover that. ....The port side of the spacecraft inflation collar being inflated and the starboard side coming up now. The starboard side is almost full, port side is completely full at this time. All swimmers are in the water. No difficulties at this time, but the astronauts are signaled that they are okay. The crew has completely inflated now, the collar is completely inflated around the spacecraft and there appears to be no difficulty whatsoever. All the antennas are up on the spacecraft and the...indicators shows evidence of having been scarred by the atmosphere. The rubber boat has been inflated and has now been pulled over to the spacecraft and is now being pulled over to the spacecraft and now being attached by the swimmers. The U. S. S. WASP is now steaming about a half a mile east of the spacecraft, getting in position for recovery.

PHOTO 1 ..barely able to see the spacecraft in the water at this point because....details of people can be made out on deck. The number 1 swimmer is now climbing up on the spacecraft and to attach the top of the flotation collar more securely around the heat shield head. This is Photo 1 reporting recovery of Gemini 12 astronauts. The astronauts have signaled they are okay. ...was a good recovery....Everything appears to be going normally at this time. Now there are 2 swimmers, one in the... and one up on the floatation collar. ...secure to the collar and the ..swimmers in ..with the astronauts. There appears to be no difficulty at this time. ...in the water and the U.S.S. Wasp is maneuvering up north of the spacecraft up wind in order to get in position for pickup. Search 3 is hovering slightly downwind and to the west and there are 4 helicopters and Air Boss 1. The swimmers are talking to.. now and secured the last... collar. The astronauts have signaled that they are okay. The astronauts are okay, the spacecraft is floating normally. The Gemini 12 recovery is a beautiful

PHOTO 1 shot, watching it at least 2000 feet all the way down and had some ... spacecraft as it descended. No difficulties whatsoever..it looks like .. not in sight... and it is doubtful whether the .. package can be recovered since we don't have it in sight. ...two up on the spacecraft and ...back in the water. Photo 1 over to Search 3 for ... port side, west side of the spacecraft. Search 3, we are ferrying the swimmers...rubber raft...spacecraft at this time. They are tying the raft to the collar with light twine. Now maneuvering the craft

END OF TAPE

... to the spacecraft. They are tying the raft to the collar with light lines. They are maneuvering the raft to the far side to attach it on the far side. They have attached small amounts of line to the rubber raft. They are now moving the raft to the up wind side of the spacecraft where they will attach it. The dye line is very visible and apparently the spacecraft has not been bound independently .... point. say about three with the swells. There is no problem at all. From this side we are observing them attaching the rubber raft to the collar at this point. The antenna is still erected, very visible from our position. Also the dye marker is very vivid against the blue water. This is .... back to .. one.

This is .... one 0 one. There now seems to be a little activity now they have attached the raft to the floatation collar. The hatches are still closed. I have not seen one of the astronauts yet. They have signaled that they are Okay. Our crew is out of the water, one on the collar. .... are climbing up. They have taken off their aqua lungs for better maneuverability around the spacecraft. ..... is now moving up wind getting ready for the pickup of the spacecraft. They don't have far to go, an extimated 2 to 2-$\frac{1}{2}$ miles maximum from the point of splashdown. .... 170 (garble). This is 401 reporting Gemini 12 (garble) .. (garble). There is no one pulling on the spacecraft and it seems to be floating comfortably ... (garble). This is 401, nothing further to report, we have had a (garble) ..

a rather pretty day. The spacecraft is observed to be about 2000 feet (garble). The spacecraft reported leaving a nice trail of dye in the water and we have at least two smokes on the sceen. (garble). Okay the port hatch is now open ... taking the antenna down. .... did you see the astronauts from your position. Over to you.

This is .... 3.We have a very good view at this point .... now the third swimmer (garble) from the port hatch and waving to the astronauts from the port hatch. The astronauts have removed their helments and he is very well visible from this point. (garble) the swimmers at this time. We will shortly be getting signals from the swimmers. They have not completely retracted the HF antennas. ..... (garble) ..... with the Astronauts (garble).

This is .... It looks like the port hatch is completely opened now and Lovell is getting out of the port side, the swimmers are hovering around. (garble) he has inflated his (garble). It looks like his ..... is in place (garble).... Capt. Lovell is in the rubber boat (garble). No difficulty encountered at this time. The swimmers are beginning to put the equipment back in and getting ready to close the port hatch. No, they are not going to close the port hatch, the main (garble).... We have encountered no difficulty what so ever at this time. Major Aldrin is completely out of the spacecraft (garble) in the rubber boat. Now it looks like

we are going to have to get the boat separated from the spacecraft in order to get away from that ... antenna. (garble). And both are going to help the helicopter get the true hold. Astronauts are motioning and talking together. The swimmers are in the boat with them holding them on.. (garble). The swimmer is attempting to close the hatch and having a little difficulty with it. The astronauts are looking worried about closing the hatch and they have got the ... wrench out and getting ready to close it. There is no difficulty at this time, the astronauts appear to be well and look good (garble) This is 401 reporting the Gemini 12. They are having a little trouble getting the top hatch closed, now they have got it and they are going to lock it tight. The astronauts appear to be riding comfortably in the boat. The hatch is now closed and the floatation collar is inflated.. Major Aldrin gave a big wave to the helicopter and he appears to be in good spirits. The crew is now shaking hands with the astronauts, waiting for the pickup (garble)... They are going to open the hatch again for some reason. Yes they are and they have got ... they have opened the hatch again, Cpt. Lovell is going back in. I assume he is going to retract the antenna. Capt. Lovell is now back in the spacecraft and we expect the antenna to go down momentarily. The Wasp is circling the spacecraft a radius of about one-half mile. (garble). The Wasp is now directly West of the spacecraft and circling waiting for the pickup of the astronauts

so they can pick up the spacecraft. Capt. Lovell has gone back into the spacecraft and the HF antenna is beginning to retract. (garble) the antenna is about four feet up and Lovell is sitting there in the open spacecraft putting it down. Okay, the HF antenna has now been completely retracted. And we commence helping Cpt. Lovell get back out of the spacecraft and that will be very shortly. (garble)..... waiting for the pickup. All three swimmers are standing by.... .... static electricity.....

END OF TAPE.

WASP All three swimmers are standing by ready to hoist - and the sling is now in the water to discharge the static electricity and .... is moving in all of the astronauts. There is the signal from the lead crew, number 1 Swim team is ready for the pickup. They'll move in all around the spacecraft and the sling is ..... swinging in a little bit due to the whirling blades of the helicopter and the swimmers are going to grab the sling - Okay, they've got the sling now and they're putting it on Captain Lovell first. Captain Lovell will be the first one up and it's all around him. Search 3 is maintaining a very good position and Captain Lovell is signalling he's ready to come up and there comes the astronaut. Captain Lovell is being hoisted just clear of the water now. Search 3 is doing a very good job of hoisting him up. He's about half way up holding on ..... No difficulties at this time. Now the Astronaut Captain Lovell is almost up to the helicopter..... They've got him up to the edge of the floor and he's now inside the helicopter. He's out of the sling and they're lowering down now to pick up Major Aldrin. Captain Lovell is inside the helicopter. One astronaut recovered and the second astronaut ready to be

picked up. Major Aldrin is giving us the signal ..... No difficulties at this time. Search 3 has now moved in back over the spacecraft to see thesling gets in the water to make sure there is no static electricity so the astronauts will not get shocked when they touch it. This is Photo 1 reporting the Gemini 12 astronaut recovery. It is proceeding as planned. No difficulties whatsoever at this time. The sling is now directly over the astronaut and is being lowered. The wind and the spray has pushed the sling away a little bit. One of the swimmers is retrieving it. They are bringing it right over to him. He now has the sling.....is giving him the sling. He has the sling on completely now is giving the signal to be pulled up. Search 3 is doing a very good job of hovering over the spacecraft. No difficulties encountered. There's the up signal from Major Aldrin and there goes Major Aldrin out of the little boat. He's being hoisted now. He's about one third of the way up. Search 3 has got the second astronaut and hoisting him now.He's one half of the way up. No difficulties at this time. The spacecraft is still floating normally. Major

WASP — Aldrin is about two thirds of the way up approaching the cabin floor now. And he is being hoisted inside. Major Aldrin is now in the helicopter and they are all shaking hands and they are getting the Major out of the sling. This is Photo 1 over to Search 3.

SEARCH 3 — And they appear to be ready for the landing on the Wasp. The Wasp is only one half a mile from the recovery area and we'll be landing shortly aboard in about two minutes. This is Search 3, back to Photo 1 preparing to switch to Wasp....

PHOTO 1 — Roger, this is Photo 1. Both the astronauts are abpard helicopter no. 66, designated Search 3 and are approaching the Wasp now for a .... landing. Search 3 and 4 - Search 3 and 4 will be landing .....immediate approach of the spacecraft. ....the signal will be that the doctor has also given the pilot in helicopter no. 66 the okay and the helicopter is approaching the Wasp. This is Photo 1 by .... power circuitry atop the .....

END OF TAPE

GEMINI 12 MISSION COMMENTARY, NOVEMBER 15, 1966, 2:01 pm CST

This is Gemini Control Houston. When Lovell and Aldrin stepped out on the deck of the carrier they got a tremendous ovation here in the Mission Control Center. The room was filled to over flowing and is still densely populated, by both NASA people and contractors. Among them Frank Cary from the Martin Company who has directed all of the Titan launches. We can also see a soft drink executive here in the person of John Glenn,a retired astronaut and Al Shepard, the Mission Director of course, Bill Schneider. Bill is still here, he is preparing to go to the Cape later this afternoon. Many handshakes and many cigars. We are planning to have a Press Conference here in Houston in about 15 minutes, featuring the officials of the program. We'll continue coverage on the Agena operations as they go on later this afternoon. We would expect that coverage to continue another 4 hours. This is Gemini Control Houston.

END OF GEMINI MISSIONS.....